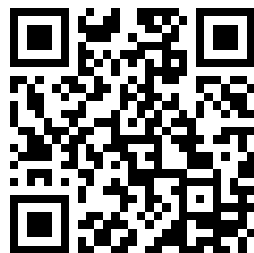


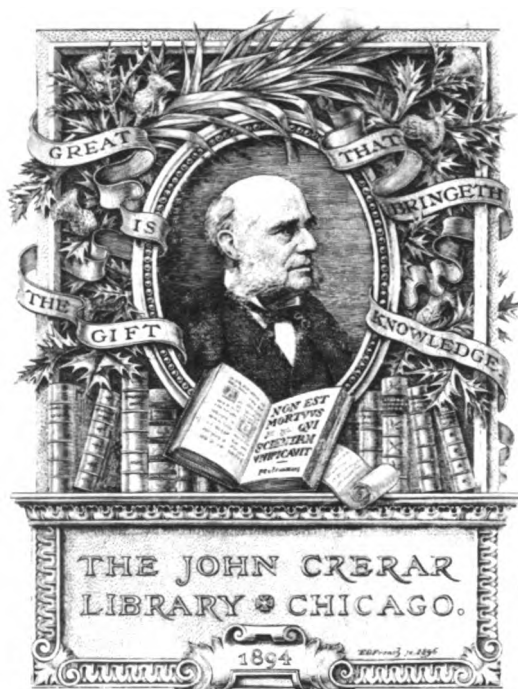
MARINE AUXILIARIES

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PRESENTED BY

W. H. Russell - Russell.

Marine Auxiliaries

EVAPORATORS
DISTILLERS
EVAPORATOR FEED HEATERS
FEED WATER HEATERS
BATH HEATERS
OIL COOLERS
OIL HEATERS
GREASE EXTRACTORS
AERATING FILTERS
COILS

First Edition 1918

The Griscom - Russell Co.
90 West St., New York

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THE GRISCOM-RUSSELL COMPANY



Views of Plant No. 1, Massillon, Ohio

Fifty Years Service

THE business of The Griscom-Russell Company was started fifty years ago, May 2nd, 1867. It soon began the manufacture of Reilly Specialties. These specialties were successful from the beginning, for they were designed for high efficiencies and to meet the exacting requirements of marine service as regards accessibility, minimum space and weight.

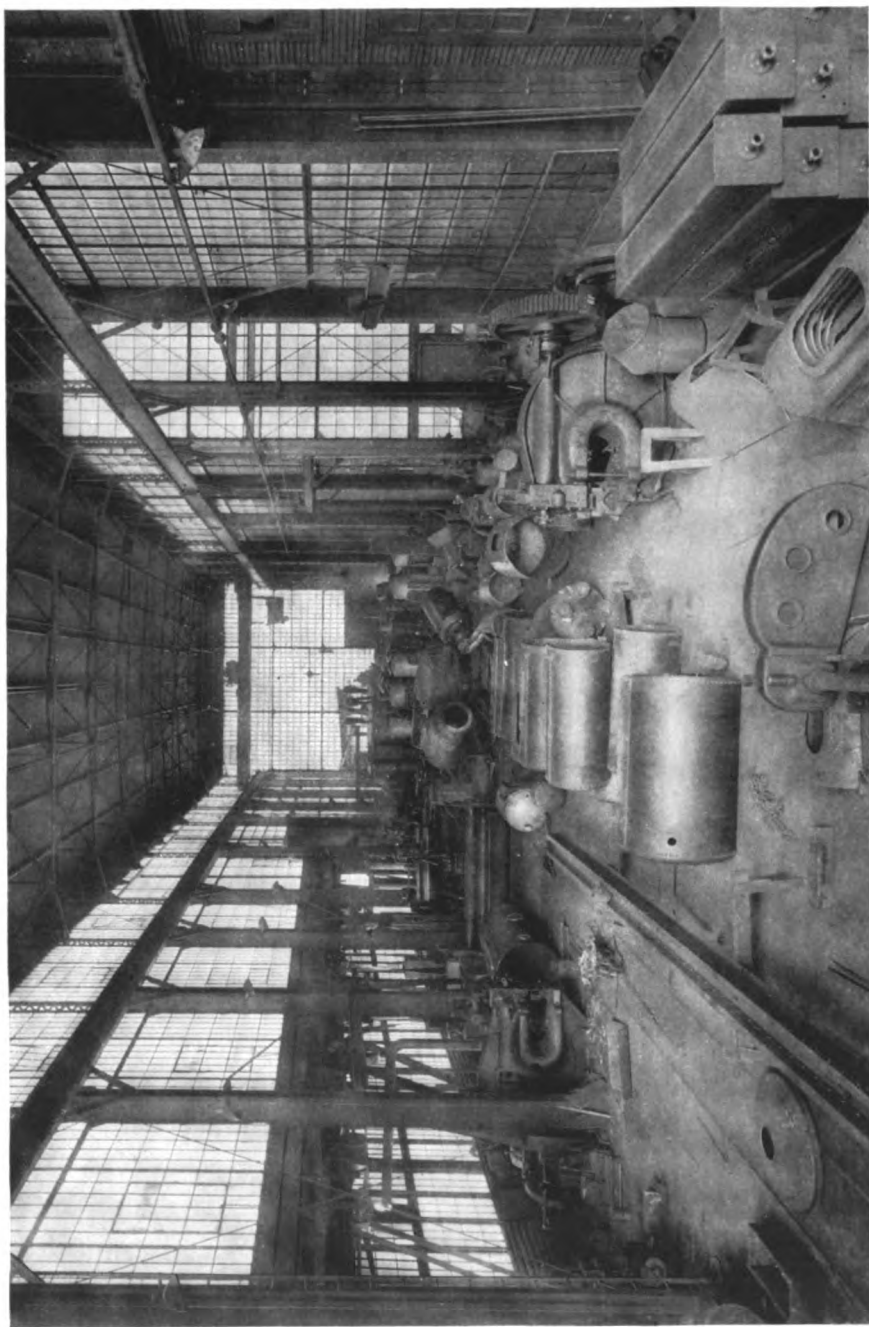
In 1891 the business was incorporated under the name of The James Reilly Repair & Supply Company, and Mr. Clement Acton Griscom, formerly General Manager of the International Mercantile Marine Company, (American, Red Star and other lines), became President of the new organization. In 1907 the name was changed to The Griscom-Spencer Company.

In 1912 The Griscom-Russell Company was organized to succeed The Griscom-Spencer Company, acquiring, at the same time, the large and completely equipped plant of the Russell Engine Company, at Massillon, Ohio, which was at once enlarged and brought to a high state of efficiency.

Throughout the fifty years during which these Companies have served the marine trade, over four million dollars have been expended in the development of new products and in the constant improvement of the original specialties. They have succeeded because they have marketed only the highest grade of products; because they have endeavored to render real service to the trade, and because they have given a square deal to all.

The best evidence of their success is shown by the constantly increasing popularity of Reilly Specialties during the past fifty years, until today they are firmly established as leaders in their respective fields.

THE GRISCOM-RUSSELL COMPANY



Portion of Erection Floor, Plant No. 1, Massillon, Ohio

The Griscom-Russell Co. Factories

MASSILLON, OHIO

THE factories of The Griscom-Russell Company are located at Massillon, Ohio, a City of twenty thousand inhabitants, situated eight miles from Canton, and about sixty miles from Cleveland, Ohio, in the center of the richest industrial and agricultural county in the State of Ohio, and of one of the largest coal districts in the country. It is but a few miles from the steel producing section of the country and is an ideal location for a factory, due to the natural resources and the close proximity to the raw and semi-finished material-producing markets.

The railroad facilities are excellent as the City is located on the main lines of the Pennsylvania Railroad, the Wheeling & Lake Erie Railroad, the Baltimore & Ohio Railroad, and the New Marietta Cleveland Division of the Pennsylvania Railroad.

Many other industries are located in Massillon and among the products are included open hearth steel billets, bars and blooms, steel sheets, steel plates, steam hammers, drop hammers, trimming presses, steam tractors, etc.

The Griscom-Russell Co. plants occupy eight acres of ground and comprise a total floor area of about 200,000 sq. ft. The various departments include drafting room, pattern shop, carpenter shop, iron foundry, forge shop, machine shop, boiler shop, sheet metal shop, copper shop and the various finishing rooms and assembling floors.

In these departments there are employed five hundred men. The iron foundry has an output of 500 tons per month.

It can readily be appreciated that the nearness of the raw material and coal markets, the complete shop departments and the excellent railroad facilities, make The Griscom-Russell Company factories at Massillon, Ohio ideal for the manufacture of their products.

A large stock of completed units is carried at Massillon, Ohio, and also in their New York Harbor, and San Francisco, Cal. warehouses.

THE GRISCOM-RUSSELL COMPANY

Sales Offices

| | |
|------------------------------|---|
| GENERAL OFFICE | 90 West Street, New York City |
| BOSTON | 53 State Street |
| CHICAGO | 835 Monadnock Building |
| PHILADELPHIA | 1636 Land Title Building |
| PITTSBURGH | 2112 1st National Bank Building |
| SAN FRANCISCO | Chas. C. Moore & Co., Engrs. Sheldon Building |
| SEATTLE | Chas. C. Moore & Co., Engrs. Mutual Life Building |
| LOS ANGELES | Chas. C. Moore & Co., Engrs. I. N. Van Nuys Building |
| NEW ORLEANS | A. M. Lockett & Co. 533 Parronne St. |
| ENGLAND | W. Christie & Grey, Ltd. 5 Lloyds Ave., London, E. C. England |
| PHILIPPINE ISLANDS | Pacific Commercial Co. 31 Plaza Maraga, Manila, P. I. |
| FACTORIES | Massillon, Ohio |
| WAREHOUSES | Jersey City, N. J. and San Francisco, Cal. |

M A R I N E A U X I L I A R I E S

Introduction

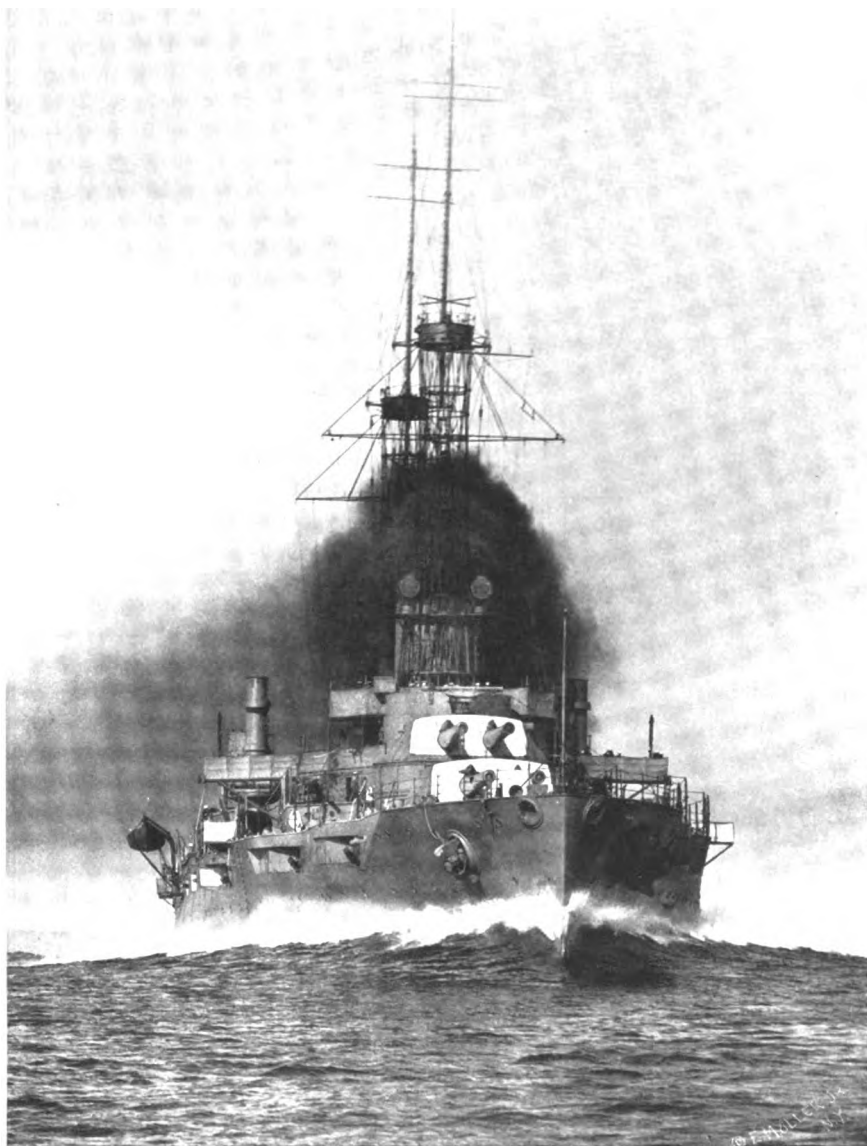
THE Marine Auxiliaries manufactured by The Griscom-Russell Co. need no introduction, for they are well and favorably known, having proven their merit by years of actual service.

Although separate bulletins of each kind of apparatus have been published, this is the first attempt to describe the complete line in one volume, forming a unique handbook of Marine Auxiliaries.

In pursuit of this purpose the following pages are arranged to cover each class of equipment in a separate section, giving uses, general construction, method of installing, instructions for ordering and the detailed specifications of the various types in which it is built.

It is the firm belief of the manufacturers that this, the only book of its kind, will be of real service to the users of these products.

THE GRISCOM-RUSSELL COMPANY



U. S. S. TEXAS

Reilly Evaporators, Submerged Type, Cast Iron Shell
(See illustration on opposite page)

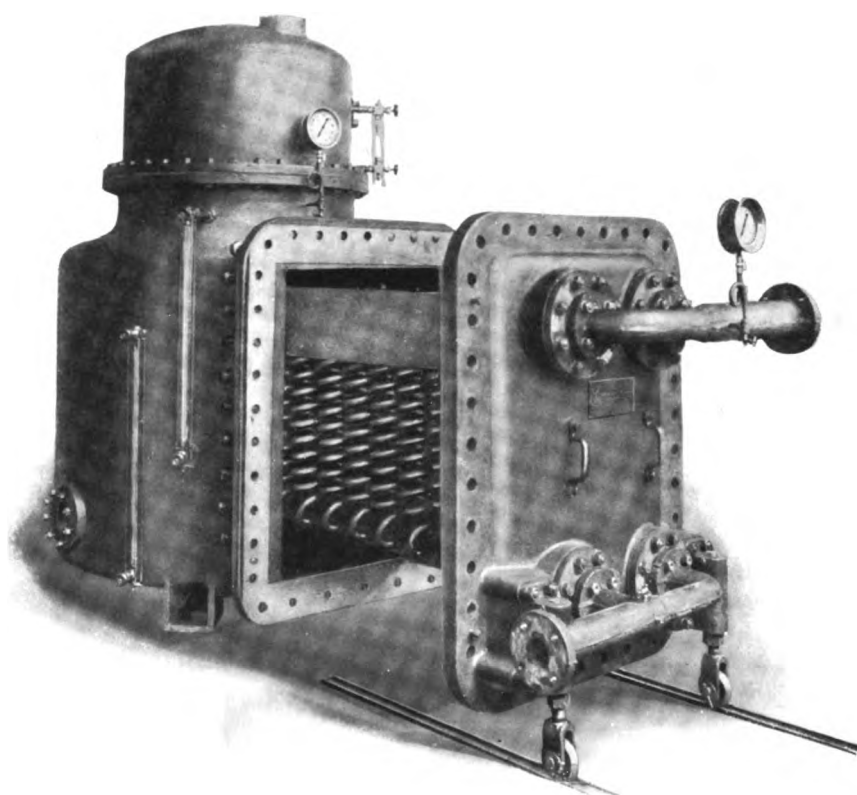
Reilly Distillers

Reilly Main Feed Water Heaters

Reilly Evaporator Feed Heaters

M A R I N E A U X I L I A R I E S

Evaporator Section



Reasons for Using an Evaporator

SHIPS at sea must have provision for supplying water suitable for boiler feed make-up, to provide for the losses throughout the system, and water for drinking and galley purposes. The degree of purity required is determined by the particular use to which this water is to be put.

If a marine boiler were run with salt water, it would boil off fresh water, leaving behind a hard salt scale. Scale would form rapidly, producing a dangerous and unstable condition when the flame is on the other side of the tube surface. Furthermore, it is not practicable to build a boiler for easy cleaning and inspection.

The evaporators are therefore desirable as they use steam instead of flame as a heating agent and there is no danger from blistered tubes or explosion if scale collects.

It is also economically possible to build apparatus using steam, which may be very easily cleaned.

Reilly Evaporator, Submerged Type

GENERAL DESCRIPTION

ON account of its special construction the Reilly Evaporator, manufactured formerly by the James Reilly Repair and Supply Co., and for the past decade by its successors, The Griscom-Russell Co., has long been familiar to the engineering world.

Supremacy in the field of evaporator construction, which they have consistently maintained for fifty years, is due in part to original research work, in which they have been guided by wide practical experience.

The Reilly Evaporator is the original multicoil evaporator. At first the cylindrical shell was provided with hand-holes; next a large door was added to permit ready access to the heating surface; then the Reilly Navy Type Evaporator was developed, in which the heating surface is attached to the manifolds secured to the door and assembled with the door, all removable from the shell. These changes were all to insure ease in the necessary cleaning or scaling of the coils.

They have now gone a step further and offer the Reilly Evaporator, Submerged Type, which has been developed by careful experiment and which is fitted with a new type of Reilly Coil, which is truly self-scaling. This evaporator has been run for as long as a year at a time without removing the coils and without any reduction in capacity.

The Reilly Evaporator, Submerged Type, is constructed with cast iron, steel, copper or composition shell, depending upon the requirements. In all types, the arrangement of coils and internal parts is identical.

The manifolds to which the coils are attached are of special composition or cast iron; coils are of seamless drawn brass tubing, tinned

THE GRISCOM-RUSSELL COMPANY

or plain, rolled to shape, without filling, in order to secure a uniform thickness of metal throughout.



Coil ends are equipped with patented quick detachable flanged joints, free from brazing, making a metal-to-metal cone-faced bolted joint.



Indestructible copper or brass baffles of a patented design are arranged so as to increase circulation and minimize priming.

The manifolds are securely bolted to the door, the coils being bolted to the steam and drain manifolds, thus permitting the entire nest of coils to be removed upon releasing the door. The weight of the door is taken off the studs by means of a jack roller. The weight of the coils and manifolds is carried by composition rollers inside the evaporator. This handling gear is an exclusive patented design.

Zinc plates are used in steel shell evaporators to protect the steel from galvanic action, and are conveniently arranged for replacement.

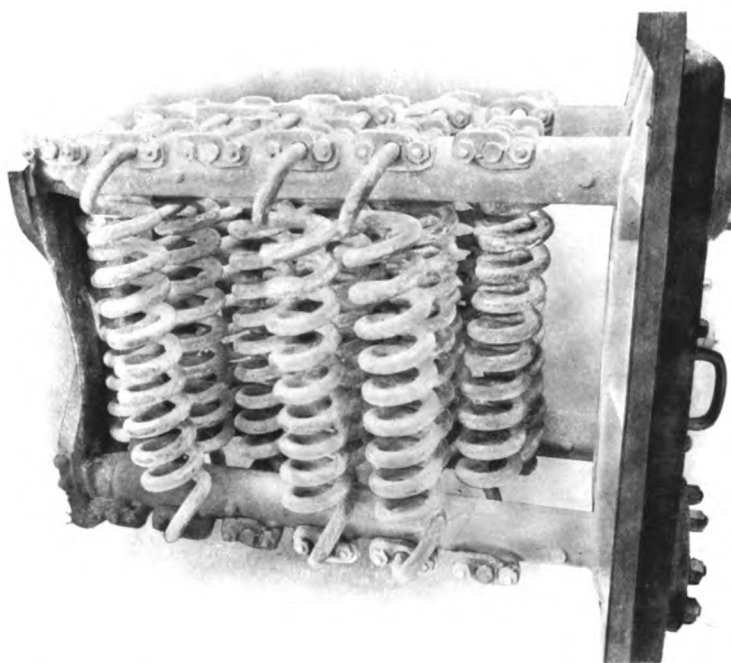
Inquiries are solicited and should be accompanied by detailed list of data as outlined on page 37.

The Reilly Evaporator, Submerged Type, will produce purer distilled water from salt sea water than any other evaporator in existence, and when operated in accordance with instructions, the distilled water will contain less than 2 grains of salt per U. S. gallon.

M A R I N E A U X I L I A R I E S



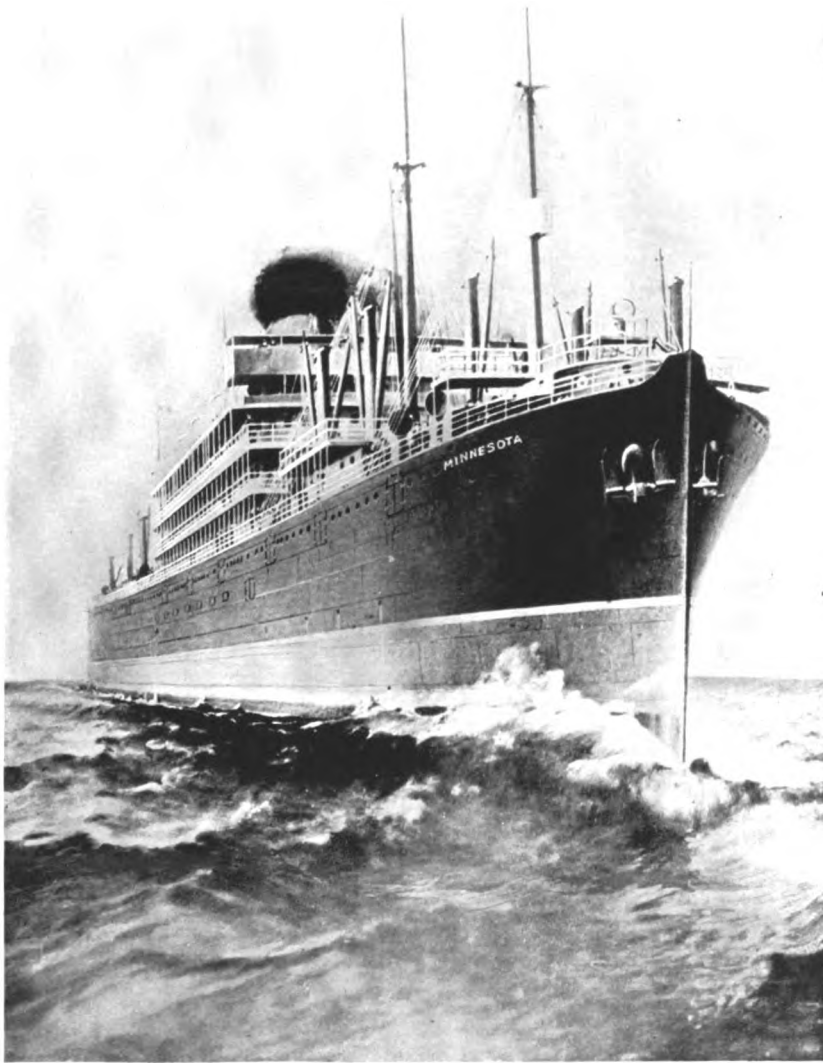
Salt Scale Automatically Cracked from Coils



Coils and Manifolds after Eleven Months Use with Sea Water

The above pictures clearly indicate the results secured in operation from the expansion movement of the coils with changes in temperature. The Reilly Coil, Submerged Type, exaggerates this movement and is especially designed to stay clean automatically without hand scaling.

THE GRISCOM-RUSSELL COMPANY



S. S. MINNESOTA
(International Mercantile Marine Co.)

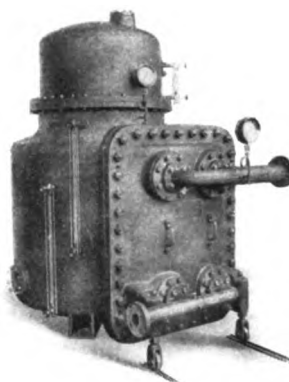
Reilly Evaporator, Submerged Type, Cast Iron Shell
Reilly Navy Type Heater

Reilly Evaporator, Submerged Type Cast Iron Shell

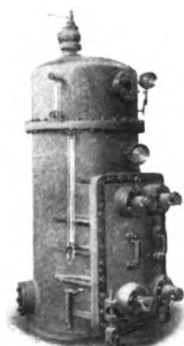
This specialty is made in three distinct types, determined entirely by the size of the unit.



Single Header Design made in capacities up to 35 tons



Bottle Neck Design made in capacities of 50 to 80 tons

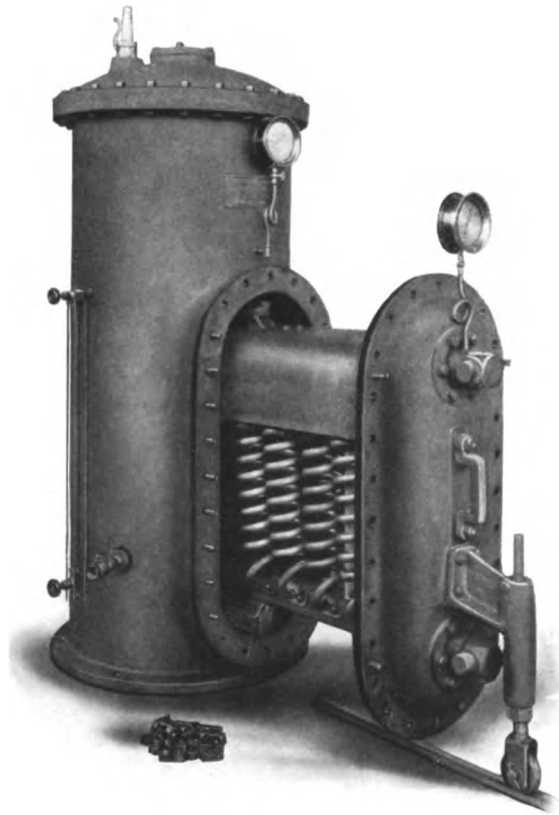


Double Header Design made in capacities of 35 to 40 tons

The cast iron shell evaporator resists the corrosive action of salt water.

THE GRISCOM-RUSSELL COMPANY

Reilly Evaporator, Submerged Type
Cast Iron Shell
Single Header Design



CONSTRUCTION

Shell, door frame and door of close grain cast iron.

Manifolds of composition or cast iron.

Enveloping baffle of copper or brass.

Coils of 1" outside diameter, #16 B. W. G. seamless drawn brass tubing.

Coils attached to manifolds by patented, cone seat, flanged connections, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Evaporator, Submerged Type Cast Iron Shell Single Header Design

| Size | CAPACITY | | I. D. Shell Inches | Height Ft.-Ins. | Approx. Weight Lbs. | SIZE OF CONNECTIONS (Inches) | | | | | | Code |
|------|-------------------------|--------------------------------|--------------------------|--------------------|---------------------------|------------------------------|-----------------|-----------------|-----------------|------|-----------------|-----------|
| | Tons per 24 hours | U. S. Gals. per 24 hours | | | | Steam | Drain | Feed | Vapor | Blow | Safety Valve | |
| 4 | 9 | 2160 | 20 | 6' 0" | 2150 | 1 $\frac{1}{4}$ | 1 | $\frac{3}{4}$ | 2 $\frac{1}{2}$ | 3 | $\frac{3}{4}$ | Exactab |
| 6 | 12 | 2880 | 20 | 6' 0" | 2200 | 1 $\frac{1}{4}$ | 1 | $\frac{3}{4}$ | 2 $\frac{1}{2}$ | 3 | 1 | Exactic |
| 8 | 16 | 3840 | 27 | 6' 6" | 2750 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1 | 3 | 3 | 1 $\frac{1}{4}$ | Exactor |
| 10 | 20 | 4800 | 27 | 6' 6" | 2800 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1 | 3 $\frac{1}{2}$ | 3 | 1 $\frac{1}{2}$ | Exactuate |
| 12 | 25 | 6000 | 31 $\frac{1}{2}$ | 6' 9" | 3500 | 2 | 1 $\frac{1}{4}$ | 1 | 4 | 3 | 2 | Exalate |
| 14 | 30 | 7200 | 36 | 6' 9" | 4200 | 2 | 1 $\frac{1}{2}$ | 1 | 4 | 3 | 2 $\frac{1}{2}$ | Exangia |
| 16 | 35 | 8400 | 40 | 6' 9" | 4700 | 2 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 3 | 3 | Exarate |

CAPACITY

Capacities are for saturated steam at not less than 90 lbs. gauge pressure to the coils and with vapor pressure in the shell above atmosphere.

MAXIMUM WORKING PRESSURES

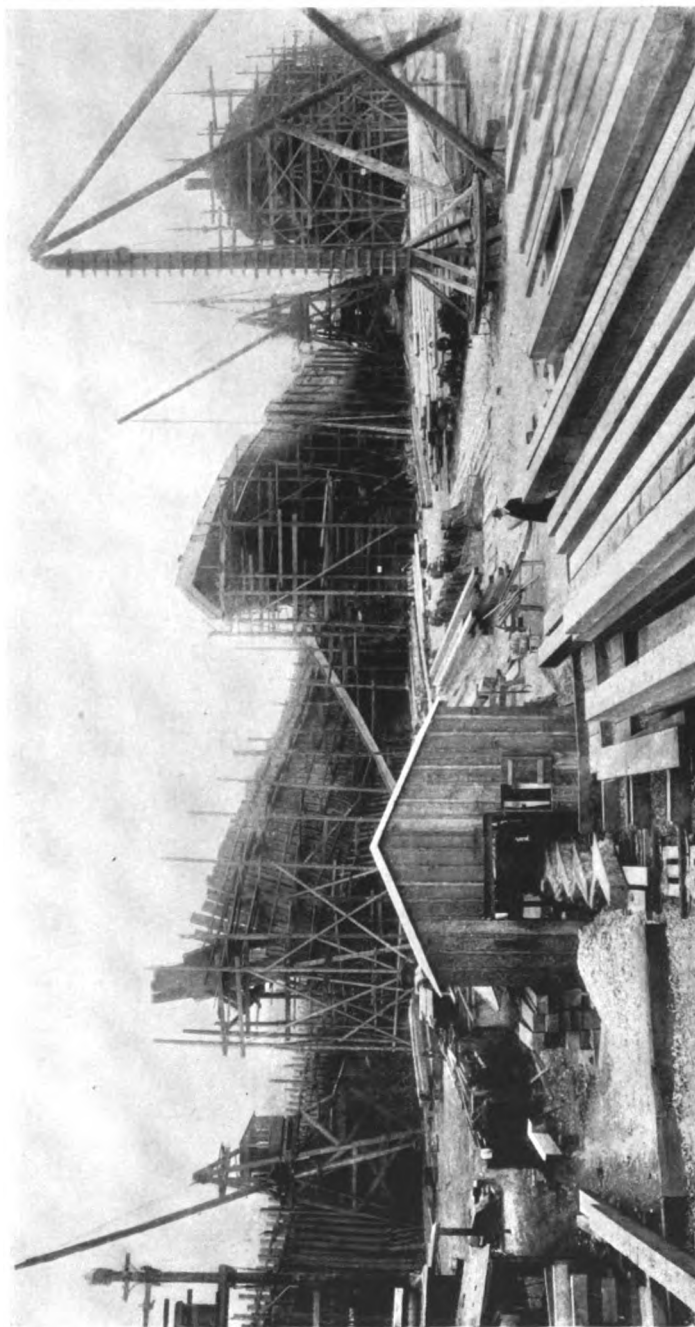
Shell, 25 lbs. per square inch.

Coils and manifolds, 250 lbs. per square inch.

FITTINGS FURNISHED

Safety valve, water gauge glass and fittings, pressure gauge for coils, compound gauge for shell, feed check valve, salinometer pot and steam trap.

THE GRISCOM-RUSSELL COMPANY

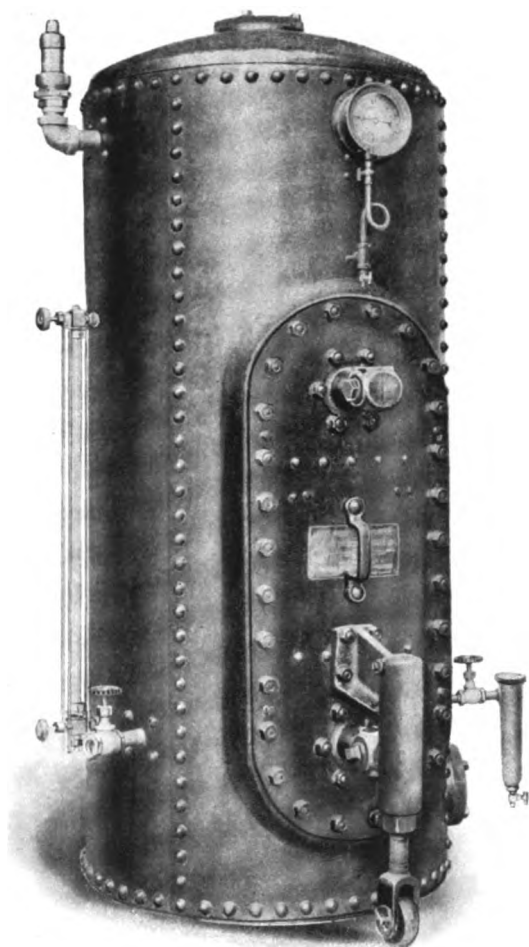


WOODEN SHIPS UNDER CONSTRUCTION

The entire fleet of steam driven wooden ships now being built by the U. S. Shipping Board Emergency Fleet Corporation, is equipped with Reilly Evaporators, Submerged Type, Steel Shell (see opposite page), and Reilly Type D Marine Two Pass Heaters

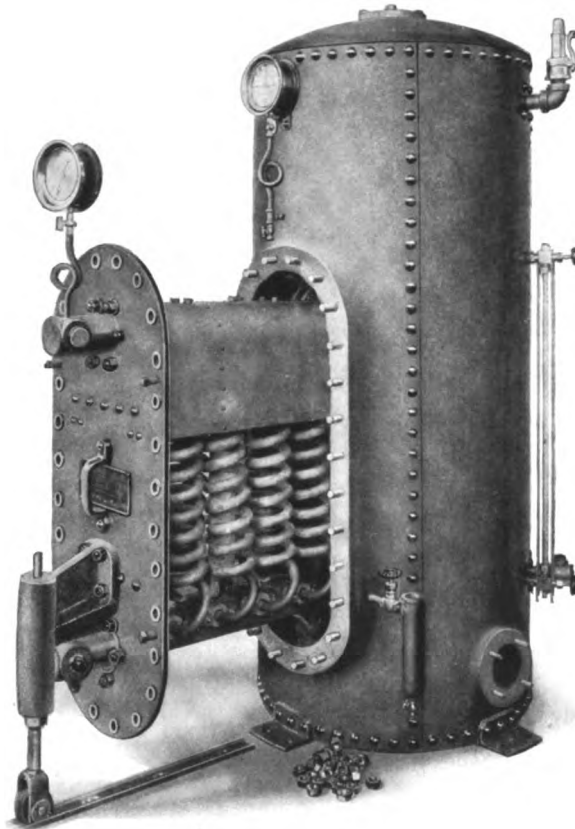
M A R I N E A U X I L I A R I E S

Reilly Evaporator, Submerged Type
Steel Shell



THE GRISCOM-RUSSELL COMPANY

Reilly Evaporator, Submerged Type Steel Shell



CONSTRUCTION

Shell and door of boiler steel.

Door frame and heads of flange steel.

Manifolds of composition or cast iron.

Enveloping baffle of copper or brass.

Coils of 1" outside diameter, #16 B. W. G. seamless drawn brass tubing.

Coils attached to manifolds by patented cone seat, flanged connections, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Evaporator, Submerged Type Steel Shell

| Size | CAPACITY | | I. D. Shell Inches | Height Ft.-Ins. | Approx. Weight Lbs. | SIZE OF CONNECTIONS (Inches) | | | | | | Code |
|------|-------------------------|--------------------------------|--------------------------|-----------------------|---------------------------|------------------------------|-----------------|-----------------|-----------------|------|-----------------|-----------|
| | Tons per 24 hours | U. S. Gals. per 24 hours | | | | Steam | Drain | Feed | Vapor | Blow | Safety Valve | |
| 4 | 9 | 2160 | 22 | 6' 0" | 900 | 1 $\frac{1}{4}$ | 1 | $\frac{3}{4}$ | 2 $\frac{1}{2}$ | 3 | $\frac{3}{4}$ | Everich |
| 6 | 12 | 2880 | 22 | 6' 0" | 1000 | 1 $\frac{1}{4}$ | 1 | $\frac{3}{4}$ | 2 $\frac{1}{2}$ | 3 | 1 | Evernia |
| 8 | 16 | 3840 | 30 | 6' 6" | 1500 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1 | 3 | 3 | 1 $\frac{1}{4}$ | Evernoid |
| 10 | 20 | 4800 | 32 | 6' 6" | 1660 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1 | 3 $\frac{1}{2}$ | 3 | 1 $\frac{1}{2}$ | Eversion |
| 12 | 25 | 6000 | 36 | 6' 9" | 2060 | 2 | 1 $\frac{1}{4}$ | 1 | 4 | 3 | 2 | Evibrate |
| 14 | 30 | 7200 | 44 | 6' 9" | 2400 | 2 | 1 $\frac{1}{2}$ | 1 | 4 | 3 | 2 $\frac{1}{2}$ | Evigilate |
| 16 | 35 | 8400 | 48 | 6' 9" | 2620 | 2 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 4 $\frac{1}{2}$ | 3 | 3 | Evincive |
| 18 | 40 | 9600 | 56 | 6' 10 $\frac{1}{4}$ " | 3700 | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 5 | 3 | 3 $\frac{1}{2}$ | Evittate |

CAPACITY

Capacities are for saturated steam at not less than 90 lbs. gauge pressure to the coils and with vapor pressure in the shell above atmosphere.

MAXIMUM WORKING PRESSURES

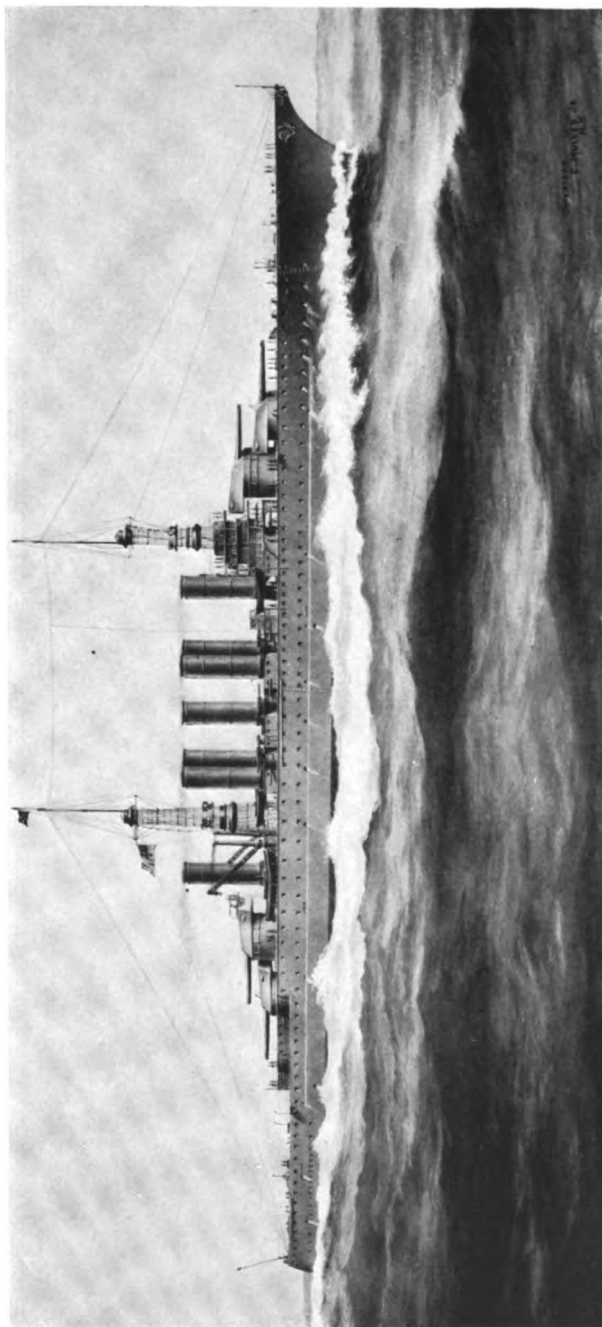
Shell, 25 lbs. per square inch.

Coils and manifolds, 250 lbs. per square inch.

FITTINGS FURNISHED

Safety valve, water gauge glass and fittings, pressure gauge for coils, compound gauge for shell, feed check valve, salinometer pot and steam trap.

THE GRISCOM-RUSSELL COMPANY



BATTLE CRUISER CLASS

U.S.S. CONSTELLATION, CONSTITUTION AND LEXINGTON

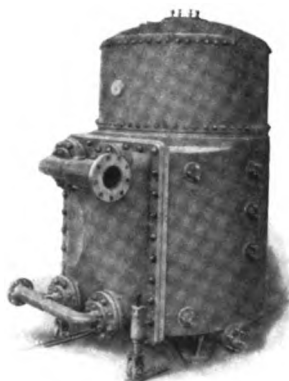
Three of the great battle cruisers now building will be equipped with Reilly Evaporators, Submerged Type, Composition Shell, Capital Ship Design. The power plant contained in one of these ships would be sufficient to furnish power for all of the transit and electric lighting service for a city of 500,000 inhabitants.

M A R I N E A U X I L I A R I E S

Reilly Evaporator, Submerged Type
For the U. S. Navy



Destroyer Design - Composition Shell



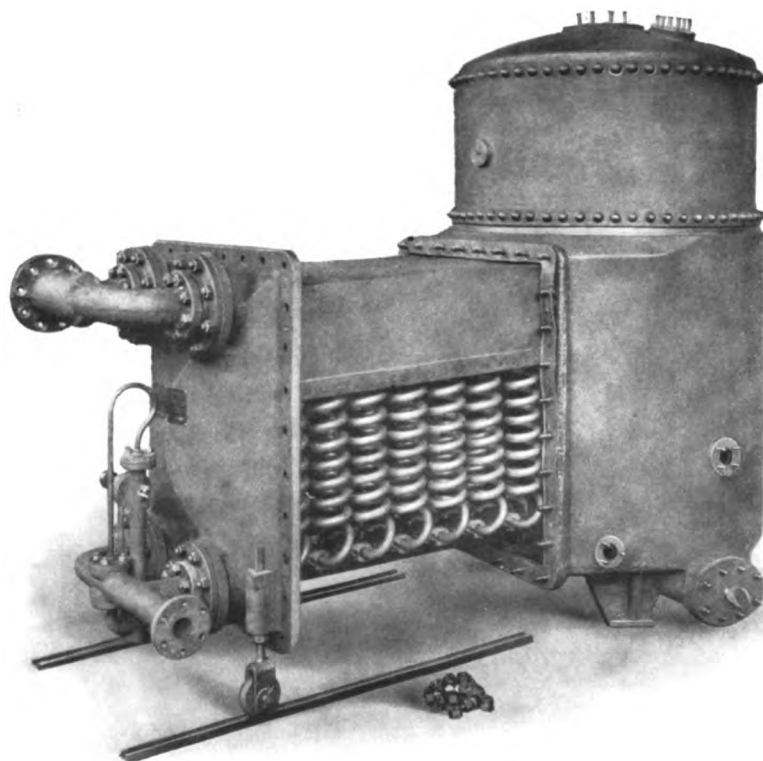
Capital Ship Design - Composition Shell
For Battleships, Battle Cruisers, Scout
Cruisers and Hospital Ships



Destroyer Design—Galvanized
Steel Shell

THE GRISCOM-RUSSELL COMPANY

Reilly Evaporator, Submerged Type Composition Shell Capital Ship Design



CONSTRUCTION

Shell and door of composition.

Dome of sheet copper riveted to shell.

Manifolds of composition.

Enveloping baffle of copper or brass.

Coils of 1" outside diameter, #16 B. W. G. seamless drawn Admiralty metal or commercial brass tubing, tinned outside.

Coils attached to manifolds by patented, cone seat, flanged connections, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Evaporator, Submerged Type Composition Shell Capital Ship Design

| Size | Inside Dia. Shell Inches | Overall Height Ft.-Ins. | Approx. Weight Lbs. | SIZE OF CONNECTIONS (Inches) | | | | | | Safety Valve | Code |
|------|-----------------------------------|-------------------------------|---------------------------|------------------------------|-------|------|-------|------|---|-----------------|--------|
| | | | | Steam | Drain | Feed | Vapor | Blow | | | |
| 28 | 40 | 6' 5½" | 4065 | 4½ | 2 | 1¼ | 4½ | 2½ | 2 | | Exhume |

CAPACITY

Nominal rating is 12,500 U. S. Gallons of distilled water per 24 hours based on double effect operation with saturated steam at 70 lbs. gauge pressure, or higher, supplied to the first effect coils and with vapor pressure in the shell of the second effect at atmosphere.

Overload capacity, 40% in excess of nominal rating.

HYDROSTATIC TEST PRESSURES

(NOT WORKING PRESSURES)

Shell, 75 lbs. per square inch.

Coils and manifolds, 400 lbs. per square inch.

FITTINGS FURNISHED

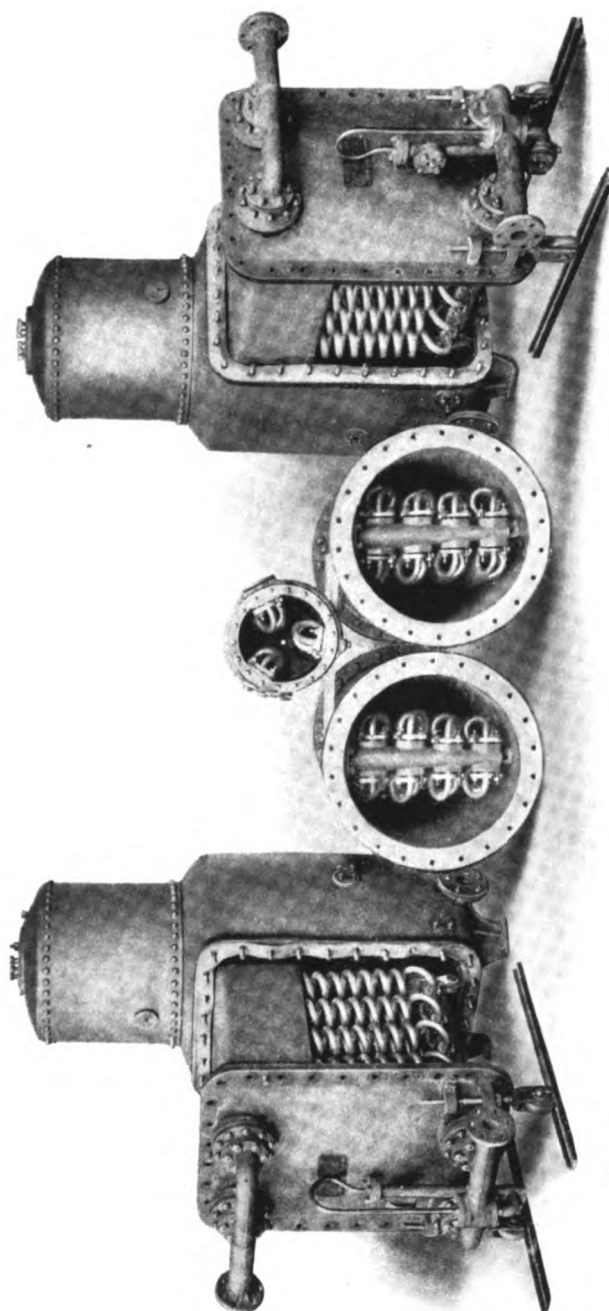
Steam and drain nozzles and special gauge glass attachment on coil drain nozzle.

THE GRISCOM-RUSSELL COMPANY



98% of the U. S. Navy Destroyers now building, and a great many of those in service, include in their equipment Reilly Evaporators, Submerged Type, Composition or Galvanized Steel Shells, Destroyer Design

M A R I N E A U X I L I A R I E S



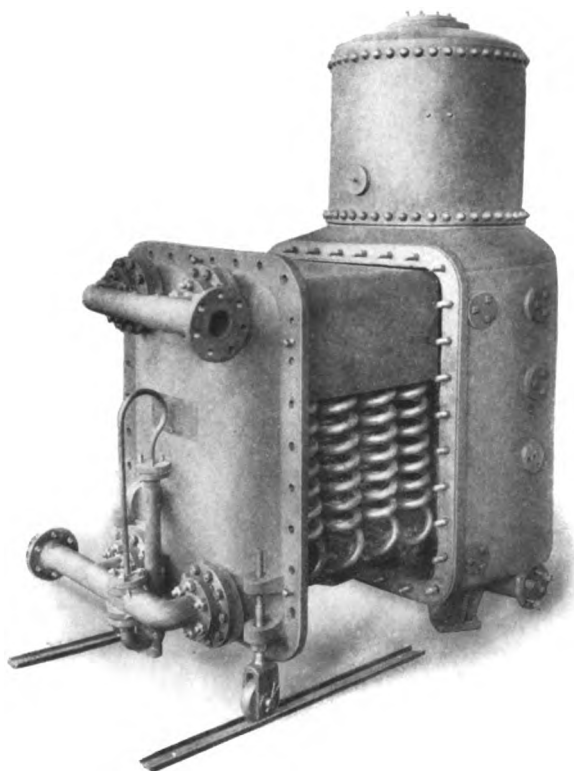
COMPLETE DESTROYER EVAPORATOR PLANT

Two Reilly Evaporators, Submerged Type, Composition Shell

Two Reilly Navy Type Distillers

One Reilly Evaporator Feed Heater

Reilly Evaporator, Submerged Type
Composition Shell
Destroyer Design



CONSTRUCTION

Shell and door of composition.

Dome of sheet copper riveted to shell.

Manifolds of composition.

Enveloping baffle of copper or brass.

Coils of 1" outside diameter, #16 B. W. G. seamless drawn Admiralty metal or commercial brass tubing, tinned outside.

Coils attached to manifolds by patented, cone seat, flanged connections, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Evaporator, Submerged Type Composition Shell Destroyer Design

| Size | Nominal Capacity U.S. Gallons per 24 Hours Double Effect | Inside Dia. Shell Inches | Overall Height Ft.-Ins. | Approx. Weight Lbs. | SIZE OF CONNECTIONS (Inches) | | | | | | Code |
|------|--|-----------------------------------|-------------------------------|---------------------------|------------------------------|-------|------|-------|------|-----------------|--------|
| | | | | | Steam | Drain | Feed | Vapor | Blow | Safety Valve | |
| 16 | 7500 | 32½ | 6' 0" | 2250 | 2½ | 2 | 1 | 3½ | 2½ | 2 | Exlam |
| 24 | 10500 | 36 | 6' 0" | 3400 | 3 | 2 | 1¼ | 4 | 2½ | 2 | Exmede |

CAPACITY

Nominal rating is based on double effect operation with saturated steam at 70 lbs. gauge pressure, or higher, supplied to the coils of the first effect, and with vapor pressure in the shell of the second effect at atmosphere.

Overload capacity, 40% in excess of nominal rating.

HYDROSTATIC TEST PRESSURES

(NOT WORKING PRESSURES)

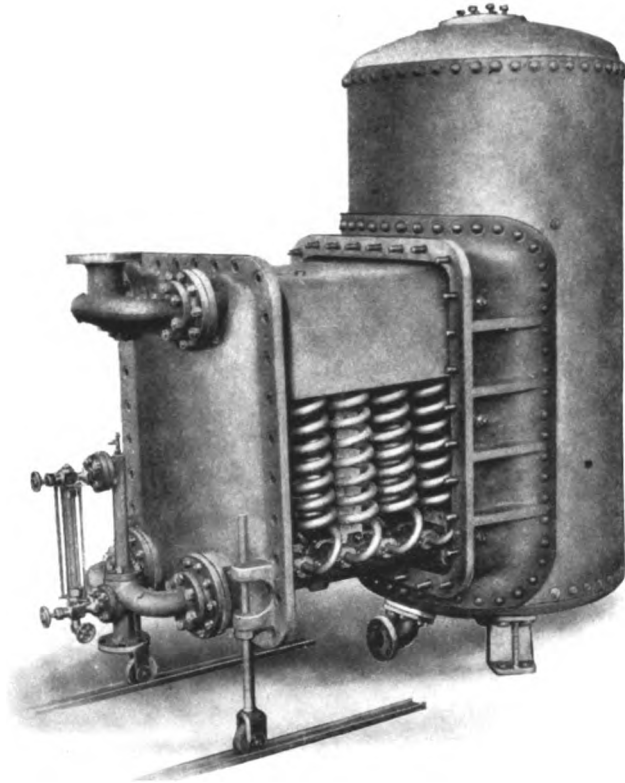
Shell, 75 lbs. per square inch.

Coils and manifolds, 400 lbs. per square inch.

FITTINGS FURNISHED

Steam and drain nozzles and special gauge glass attachment on coil drain nozzle.

Reilly Evaporator, Submerged Type
Galvanized Steel Shell
Destroyer Design



CONSTRUCTION

Shell and heads of galvanized steel plate.

Door frame and door of composition.

Manifolds of composition.

Enveloping baffle of copper or brass.

Coils of 1" outside diameter, #16 B. W. G. seamless drawn Admiralty metal or commercial brass tubing, tinned outside.

Coils attached to manifolds by patented cone seat, flanged connections, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Evaporator, Submerged Type Galvanized Steel Shell Destroyer Design

| Size | Inside Dia. Shell Inches | Overall Height Ft.-Ins. | Approx. Weight Lbs. | SIZE OF CONNECTIONS (Inches) | | | | | | Code |
|------|-----------------------------------|-------------------------------|---------------------------|------------------------------|-------|------|-------|------|-----------------|--------|
| | | | | Steam | Drain | Feed | Vapor | Blow | Safety Valve | |
| 16 | 32 | 6' 5" | 2650 | 2 | 1½ | 1 | 3 | 2 | 1 | Exodus |

CAPACITY

Nominal rating is 7,500 U. S. Gallons of distilled water per 24 hours based on double effect operation with saturated steam at 70 lbs. gauge pressure, or higher, supplied to the first effect coils and with vapor pressure in the shell of the second effect at atmosphere.

Overload capacity, 40% in excess of nominal rating.

HYDROSTATIC TEST PRESSURES

(NOT WORKING PRESSURES)

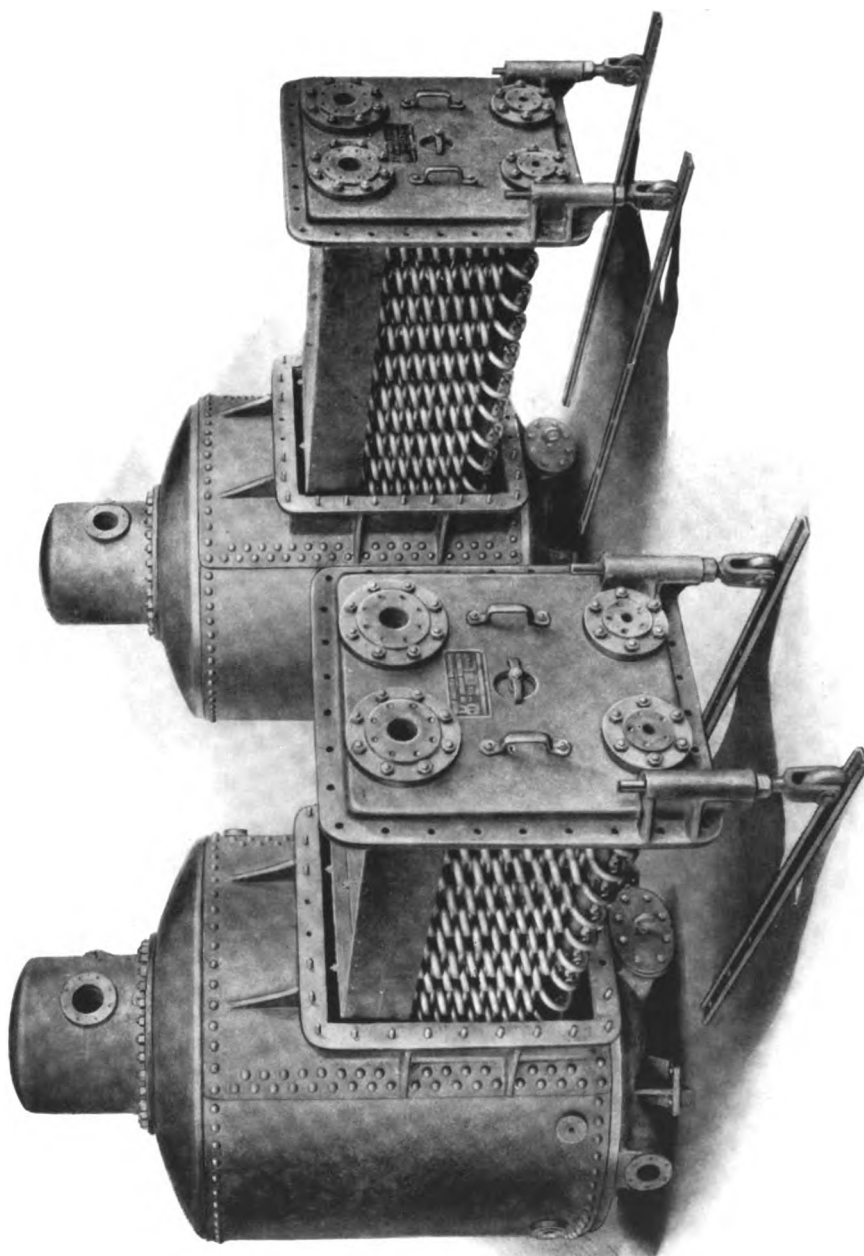
Shell, 75 lbs. per square inch.

Coils and manifolds, 260 lbs. per square inch.

FITTINGS FURNISHED

Steam and drain nozzles and special gauge glass attachment on coil drain nozzle.

THE GRISCOM-RUSSELL COMPANY

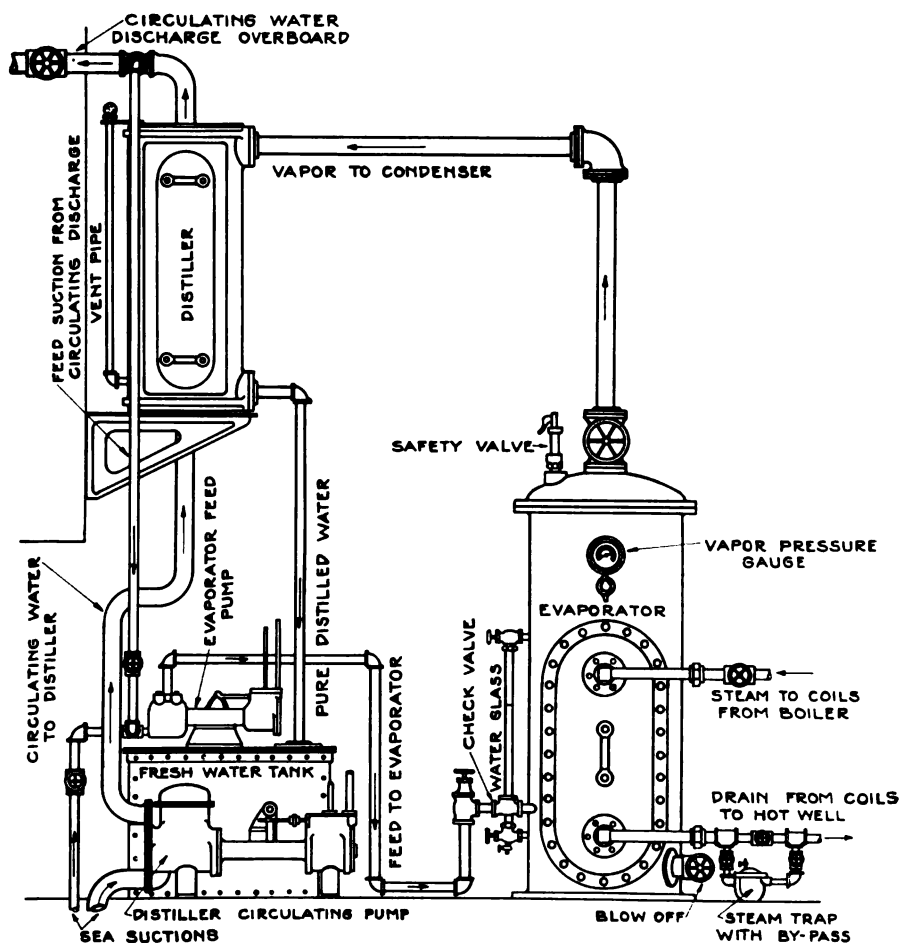


Special Reilly Evaporators, Submerged Type, Composition Shell, as built for the
U. S. S. MISSISSIPPI and IDAHO

Reilly Evaporator, Submerged Type

THE FOLLOWING INFORMATION IS REQUIRED WHEN
REQUESTING PRICES OR ORDERING:

1. Capacity desired (either tons or U. S. gallons per 24 hours). This must cover maximum conditions.
2. Single or multiple effect operation. (Usually single effect for commercial marine service, and double effect for Navy service).
3. Steam pressure available. (Usually 75 lbs. to 100 lbs. when taken from auxiliary steam line).
4. Quantity of steam available.
5. Character of water to be evaporated and close approximation of its analysis for solids.
6. Purity of product desired. (Usually stated in grains of chlorine per U.S. gallon).
7. Purpose for which distillate is to be used. (For boiler feed make-up, drinking water or storage batteries).
8. Construction preferred, cast iron or steel shell. This is governed by weight permissible.



Instructions for Installing a Reilly Evaporator and Distiller Plant

(SINGLE EFFECT LAYOUT)

A complete plant for make-up feed and drinking water consists of the following units:

Evaporator, distiller, aerating filter, circulating pump, feed pump, trap and storage tank.

M A R I N E A U X I L I A R I E S

These units may be located wherever desired, except that the distiller should be placed as high above the evaporator as possible.

The steam for evaporator coils should be taken direct from boiler or auxiliary steam main and the drain from the evaporator coils should be led to a steam trap. This trap should be as near as possible to the bottom manifold and below it. There must be no chance for a water pocket to form between the bottom manifold connection and the steam trap.

Pet cocks should be installed on top of the bottom manifold, as well as on steam trap and allowed to bleed air continuously and freely.

Steam traps should be bypassed to assist in free operation when running at high capacities.

The vapor connection on shell of evaporator should be valved, and led either to feed water heater, L. P. receiver or to main engine condenser; the relative efficiency of the three methods depending upon local conditions. A branch from the vapor pipe should be led to a special distiller for drinking and culinary purposes. The condensed vapor from the coils of the distiller runs by gravity to the aerating filter, and thence to the fresh water tanks.

The circulating pump and feed pump may be located wherever is most convenient; but when possible locate the evaporator feed pump close to evaporator, so that the engineer may conveniently time this pump according to the water level in evaporator gauge glass.

The suction to evaporator feed pump may be taken either from the circulating pump discharge or direct from the sea.

The evaporator feed pump discharge may be led directly into the evaporator, or if preferred may be first passed through a small feed water heater, taking its steam supply from the exhaust of the pump.

When fitting up the feed pump, provide a branch from its discharge pipe to permit ready connection to steam manifold of

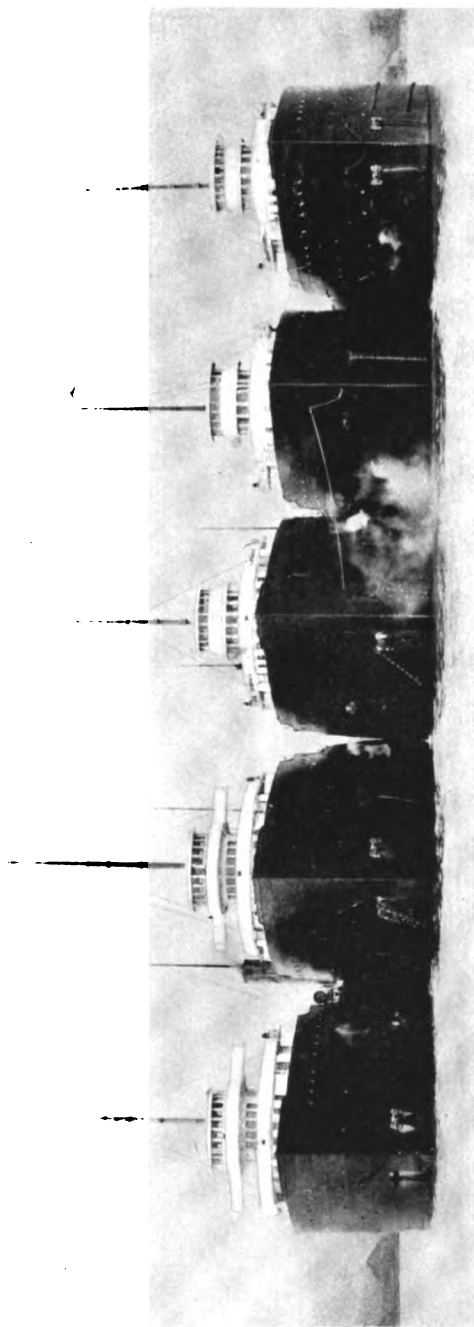
THE GRISCOM-RUSSELL COMPANY

evaporator for testing purposes when door is open. This avoids testing the coils with steam.

The steam and exhaust to pumps may be arranged to suit conditions. The blow-off from the evaporator should discharge overboard, with a suitable check valve at the ship's side.

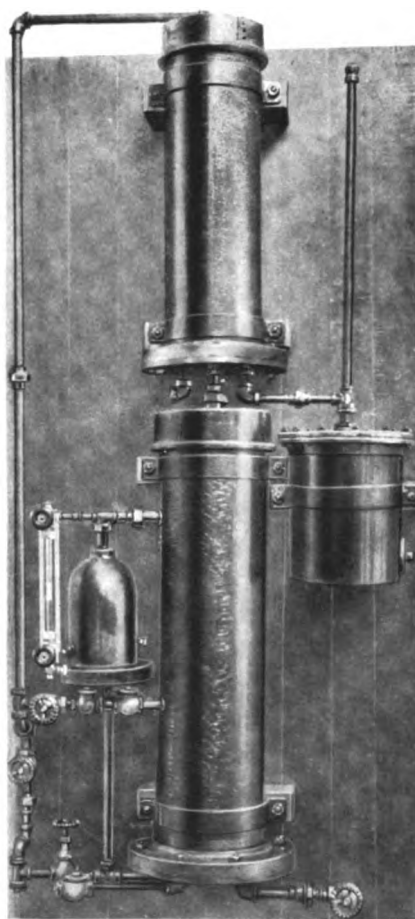
The blow-off line should be run full size of the bottom blow-off connection on the evaporator with as few turns in it as possible. Use only angle valves or gate valves, as this flow line is intended to carry off the pieces of scale.

M A R I N E A U X I L I A R I E S



FLEET OF FREIGHT-CARRYING LAKE STEAMERS
300 Vessels of this type are equipped with Reilly Drinking Water Evaporators

Reilly Evaporator Small Drinking Water Set



These small evaporator sets form complete plants consisting of Evaporator, Distiller, Aerating Filter, Rapid Water Feeder and all necessary interconnecting piping, fittings, valves and traps, all mounted on a suitable back-board finished in shellacked varnish.

They are designed particularly for use on freight-carrying Lake Steamers, etc., for supplying drinking water, to comply with the new Federal law. They are also suitable for any service where small quantities of distilled water are needed.

Reilly Evaporator Small Drinking Water Set

DETAILED SPECIFICATION OF VARIOUS UNITS

REILLY EVAPORATOR

SUBMERGED TYPE:

- Shell of lap-welded steel pipe.
- Cover and bottom flange of cast iron.
- Coil of 1" outside diameter #16 B.W.G. seamless drawn brass tubing.
- Enveloping baffle of copper or brass.

REILLY DISTILLER:

- Shell of lap-welded steel pipe.
- Cover and bottom flange of cast iron.
- Coil of 1" outside diameter #16 B.W.G. seamless drawn copper tubing, tinned inside and out.

REILLY AERATING FILTER:

- Shell and basket of galvanized iron.
- Pipe flanges of cast iron.
- Filtering medium—animal bone charcoal.

CAPACITY:

This evaporator set is made in one size only, namely 30 gallons of distilled water per hour, with steam at 60 lbs. gauge pressure, and circulating water at lake temperature.

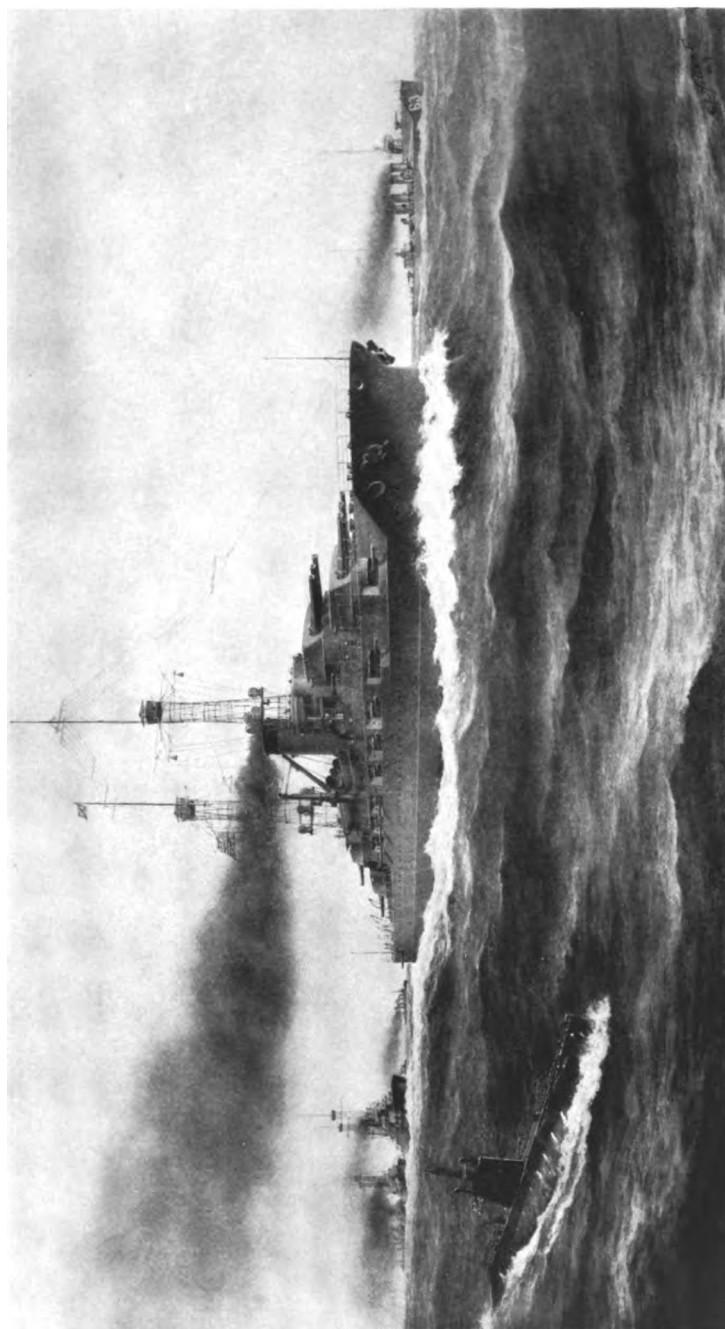
DIMENSIONS OF COMPLETE SET:

The dimensions of the back-board are 3' 3" wide by 6' 8" high.

WEIGHT OF COMPLETE SET:

800 pounds.

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M A R I N E A U X I L I A R I E S

Distiller Section



Reason for Using a Distiller

THE purpose of a distiller is to condense all or a part of the vapor from the evaporator to provide pure drinking water on shipboard. The Reilly Distiller is a special type of condenser taking clean vapor from the evaporator, and condensing it in copper coils, thus insuring pure water. The construction is such that there is absolutely no possibility of the circulating water leaking into the distilled water chamber. It is readily seen that this is an important feature when using harbor or sea water for condensing.

Reilly Distiller

GENERAL DESCRIPTION

The Reilly Distiller is built with either a cast iron or copper shell equipped with Reilly coils of seamless drawn copper tubing.



These coils form the condensing surface of the distiller. The vapor is condensed inside the coils and the cooling water circulates around the coils in the shell.



Screwed Union Joint



Flanged Joint

The Reilly Coils are attached to spuds by patented copper face union joints, except in the Reilly Navy Type Distiller in which the patented cone seat flanged connection is used. These joints are made without brazing; remain tight when jarred and will not leak. As the coils are rolled in the form of a helical spring, there is no chance of trouble due to expansion or contraction. The coils are interchangeable and tested to many times the working pressure. Due to the construction of the Reilly coils and patented joints, there is absolutely no possibility of salt water leaking into the distilled water where even a slight trace would render the water unpalatable.

THE GRISCOM-RUSSELL COMPANY



U. S. COLLIER JUPITER
Reilly Type D Marine Distiller. Reilly Evaporators. Reilly Navy Type Heater

M A R I N E A U X I L I A R I E S

Reilly Distiller



Reilly Type D Marine Distiller



Reilly Type K Marine Distiller

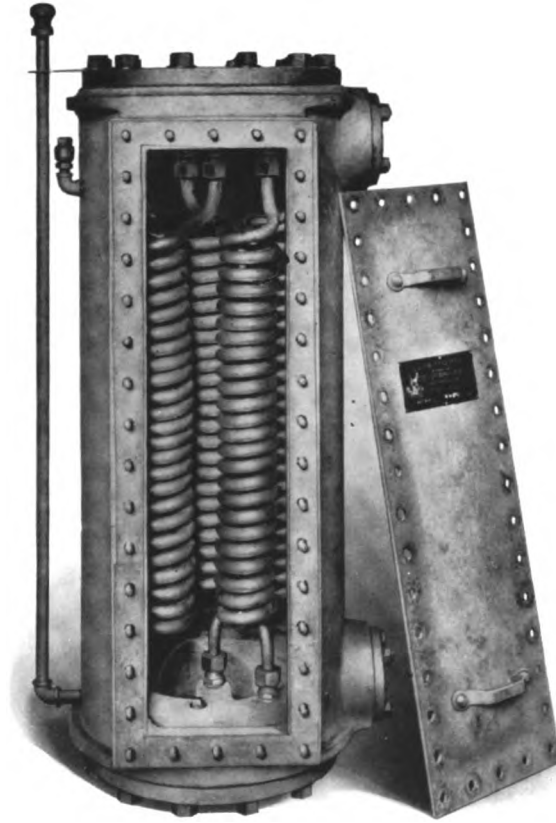


Reilly Copper Shell Distiller



Reilly Navy Type Distiller

Reilly Type D Marine Distiller



CONSTRUCTION

Shell and manifolds of close grain cast iron, heavily galvanized.

Door of flange steel.

Coils of 1" outside diameter #16 B. W. G. seamless drawn copper tubing, heavily tinned inside and out. Coils in this type distiller are not crimped.

Coils attached to manifolds by patented copper face union joints free from brazing.

NOTE.—Specially furnished in black iron shell if preferred.

M A R I N E A U X I L I A R I E S

Reilly Type D Marine Distiller

| Size | Capacity—U. S. Gals. per 24 hrs. | | I. D. Shell Inches | Height Ft.-Ins. | SIZE OF CONNEC- TIONS (Inches) | | | Approx. Weight With Fittings Lbs. | Code |
|------|-------------------------------------|-----------------------------|--------------------------|-----------------------|---------------------------------------|----------------------|------------------------|---|---------|
| | Steam at 3 lbs. Gauge | Steam at 8 lbs. Gauge | | | Circ. Water Inlet and Outlet | Vapor to Coils | Drain from Coils | | |
| 1 | 370 | 590 | 6 | 4' 7" | 1 | 1 | $\frac{1}{2}$ | 300 | Dactylo |
| 2 | 740 | 1180 | 10 | 4' 8" | $1\frac{1}{4}$ | $1\frac{1}{4}$ | $\frac{3}{4}$ | 670 | Daddock |
| 3 | 1110 | 1770 | 14 | 4' 8" | $1\frac{1}{2}$ | $1\frac{1}{2}$ | 1 | 800 | Daesman |
| 4 | 1480 | 2360 | 14 | 4' 8" | 2 | 2 | 1 | 820 | Daghesh |
| 5 | 1850 | 2950 | $16\frac{1}{2}$ | 4' 8" | 2 | 2 | 1 | 920 | Daidlie |
| 6 | 2220 | 3540 | 18 | 4' 8" | 2 | $2\frac{1}{2}$ | $1\frac{1}{4}$ | 1300 | Daimois |
| 7 | 2590 | 4130 | 18 | 4' 8" | 2 | $2\frac{1}{2}$ | $1\frac{1}{4}$ | 1320 | Dalaway |
| 8 | 2960 | 4720 | 20 | 4' 8" | $2\frac{1}{2}$ | $2\frac{1}{2}$ | $1\frac{1}{4}$ | 1660 | Daloyet |
| 9 | 3330 | 5310 | 25 | 4' 9 $\frac{1}{2}$ " | $2\frac{1}{2}$ | 3 | $1\frac{1}{4}$ | 2090 | Dalripa |
| 10 | 3700 | 5900 | 25 | 4' 9 $\frac{1}{2}$ " | $2\frac{1}{2}$ | 3 | $1\frac{1}{2}$ | 2180 | Dambose |
| 11 | 4070 | 6490 | 25 | 4' 9 $\frac{1}{2}$ " | 3 | 3 | $1\frac{1}{2}$ | 2200 | Damasin |
| 12 | 4440 | 7080 | 25 | 4' 9 $\frac{1}{2}$ " | 3 | 3 | $1\frac{1}{2}$ | 2220 | Danaite |
| 18 | 6660 | 10620 | $31\frac{1}{2}$ | 4' 10 $\frac{1}{2}$ " | 4 | 4 | 2 | 2650 | Danbuit |

Capacities are based on using 10 pounds of circulating water at 80° F. per pound of vapor condensed. Much higher capacities can be secured if a larger quantity of circulating water is available.

MAXIMUM WORKING PRESSURES

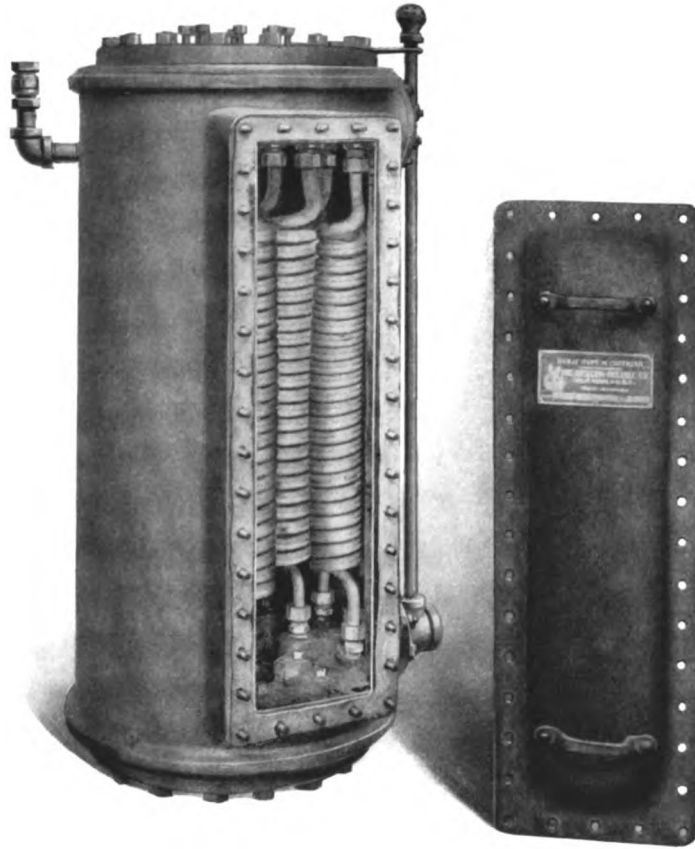
Shell, 25 lbs. per square inch.

Coils and manifolds, 250 lbs. per square inch.

FITTINGS FURNISHED

Vacuum breaker and galvanized iron vent pipe with composition rose head.

Reilly Type K Marine Distiller



CONSTRUCTION

Shell and manifolds of close grain cast iron.

Door of flange steel.

Coils of 1" outside diameter #16 B. W. G. seamless drawn copper tubing, heavily tinned inside and out. These coils are crimped.

Coils attached to manifolds by patented copper face union joints free from brazing.

NOTE.—Specially furnished in galvanized iron shell if preferred.

M A R I N E A U X I L I A R I E S

Reilly Type K Marine Distiller

| Size | Capacity U. S. Gals. per 24 hrs. With Vapor at 8 Lbs. Gauge | I. D. Shell (Ins.) | Height Ft.-Ins. | Center to Center of Vapor Connections Ft.-Ins. | Center of Shell to Face of Vapor Connections, Inches | SIZE OF CONNE- CTIONS (Inches) | | | Approx Wt. With Fittings (Lbs.) | Code |
|------|---|--------------------------|----------------------|---|---|-----------------------------------|--------------------------------|--|---|----------|
| | | | | | | Max. Vapor to Coils | Std. Drain From Coils | Std. Circu- lating Water Inlet & Outlet | | |
| 1 | 750 | 6 | 4' 4 $\frac{7}{8}$ " | 3' 10 $\frac{1}{2}$ " | 4 | 1 $\frac{1}{4}$ | $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 300 | Kadum |
| 2 | 1500 | 10 | 4' 5 $\frac{1}{4}$ " | 3' 10 $\frac{1}{2}$ " | 6 $\frac{3}{4}$ | 2 | $\frac{3}{4}$ | 1 $\frac{1}{2}$ | 600 | Kadicin |
| 3 | 2250 | 14 | 4' 5 $\frac{1}{4}$ " | 3' 10 $\frac{1}{2}$ " | 8 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 1 | 2 | 830 | Kadbake |
| 4 | 3000 | 14 | 4' 5 $\frac{1}{4}$ " | 3' 10 $\frac{1}{2}$ " | 8 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 850 | Kadlure |
| 5 | 3750 | 14 | 4' 5 $\frac{1}{4}$ " | 3' 10 $\frac{1}{2}$ " | 8 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 3 | 870 | Kadilate |
| 6 | 4500 | 16 $\frac{1}{2}$ | 4' 5 $\frac{3}{8}$ " | 3' 10 $\frac{1}{2}$ " | 9 $\frac{5}{8}$ | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 3 | 1200 | Kadosite |
| 8 | 6000 | 18 | 4' 5 $\frac{1}{2}$ " | 3' 6 $\frac{3}{4}$ " | 10 $\frac{5}{8}$ | 3 | 2 | 3 $\frac{1}{2}$ | 1400 | Kadiserp |
| 10 | 7500 | 20 | 4' 6 $\frac{1}{4}$ " | 3' 7 $\frac{1}{4}$ " | 12 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | 2 | 4 | 1600 | Kadada |
| 12 | 9000 | 21 $\frac{1}{2}$ | 4' 8 $\frac{1}{4}$ " | 3' 9" | 12 $\frac{3}{8}$ | 3 $\frac{1}{2}$ | 2 | 4 | 1800 | Kadipar |
| 15 | 11250 | 25 | 4' 8 $\frac{3}{8}$ " | 3' 8 $\frac{1}{2}$ " | 14 $\frac{1}{8}$ | 4 | 2 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 2300 | Kadiar |
| 18 | 13500 | 25 | 4' 8 $\frac{3}{8}$ " | 3' 8 $\frac{1}{2}$ " | 14 $\frac{1}{8}$ | 4 $\frac{1}{2}$ | 2 $\frac{1}{2}$ | 5 | 2350 | Kadgone |

Capacities are based on using 20 lbs. of circulating water at 80° F. per pound of vapor condensed. Much higher capacities can be secured if a larger quantity of circulating water is available.

MAXIMUM WORKING PRESSURES

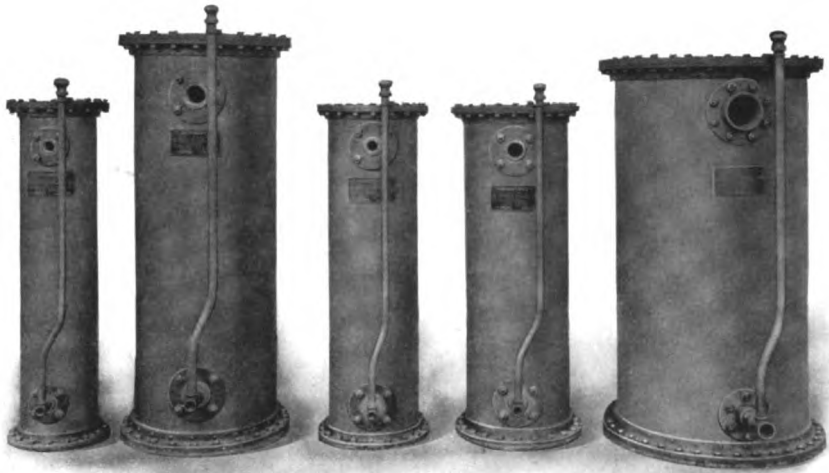
Shell, 25 lbs. per sq. in.

Coils and manifolds, 250 lbs. per sq. in.

FITTINGS FURNISHED

Vacuum breaker and galvanized iron vent pipe with rose head.

Reilly Copper Shell Distiller



CONSTRUCTION

Shell of copper.

Heads and manifolds of composition.

Heads are bolted to shell and may be removed for access to heating surface.

Coils of $\frac{7}{8}$ " outside diameter #16 B. W. G. seamless drawn copper tubing, heavily tinned inside and out.

Coils attached to manifolds by patented copper face union joints free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Copper Shell Distiller

| Size | I. D. of Shell Inches | Capacity U.S. Gals. per 24 hrs. | | Height Ft.-Ins. | SIZE OF CONNECTIONS (Inches) | | | Approx. Weight With Fittings Lbs. | Code |
|------|--------------------------------|------------------------------------|-----------------------------|----------------------|---------------------------------|------------------------|-------------------------------------|---|---------|
| | | Steam at 3 Lbs. Gauge | Steam at 8 Lbs. Gauge | | Vapor to Coils | Drain From Coils | Circulating Water Connections | | |
| 1 | 5 | 240 | 300 | 2' 8 $\frac{1}{4}$ " | 1 | $\frac{1}{2}$ | 1 | 50 | Debacle |
| 2 | 8 | 480 | 600 | 2' 8 $\frac{1}{4}$ " | 1 | $\frac{1}{2}$ | 1 | 100 | Debouch |
| 3 | 10 $\frac{1}{2}$ | 720 | 900 | 4' 0 $\frac{1}{2}$ " | 1 $\frac{1}{4}$ | $\frac{3}{4}$ | 1 $\frac{1}{4}$ | 175 | Decagon |
| 4 | 13 | 960 | 1200 | 4' 0 $\frac{1}{2}$ " | 1 $\frac{1}{4}$ | $\frac{3}{4}$ | 1 $\frac{1}{2}$ | 260 | Decerpt |
| 5 | 15 | 1200 | 1500 | 4' 1" | 2 | 1 | 2 | 350 | Decharm |
| 6 | 15 | 1440 | 1800 | 4' 1" | 2 | 1 | 2 | 365 | Decaire |
| 8 | 17 | 1920 | 2400 | 4' 1" | 2 | 1 | 2 | 400 | Decidua |
| 10 | 20 | 2400 | 3000 | 4' 3" | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 600 | Decifer |
| 14 | 22 | 3360 | 4200 | 4' 3" | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 3 | 700 | Decilux |
| 16 | 25 | 3840 | 4800 | 4' 3" | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 3 | 850 | Deciner |
| 18 | 25 | 4320 | 5400 | 4' 3" | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | 900 | Declive |
| 23 | 30 | 5520 | 6900 | 4' 3" | 3 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 4 | 1100 | Decours |
| 25 | 30 | 6000 | 7500 | 4' 3" | 3 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 4 | 1150 | Decrete |

Capacities are based on using 10 pounds of circulating water at 80° F. per pound of vapor condensed. Much higher capacities can be secured if a larger quantity of circulating water is available.

MAXIMUM WORKING PRESSURES

Shell, 25 lbs. per sq. in.

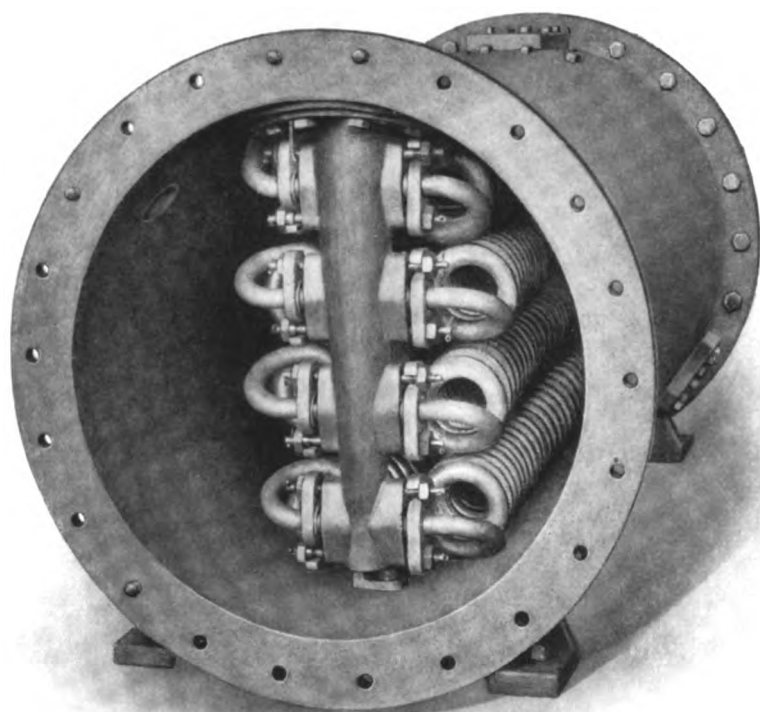
Coils and manifolds—200 lbs. per sq. in.

FITTINGS FURNISHED

Vacuum breaker and brass vent pipe with composition rose head.

THE GRISCOM-RUSSELL COMPANY

Reilly Navy Type Distiller



CONSTRUCTION

Shell and heads of close grain cast iron.

Manifolds of composition.

Coils of 1" outside diameter #16 B. W. G. seamless drawn copper tubing, tinned inside and out.

Coils attached to manifolds by patented cone seat flanged connections free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Navy Type Distiller

| Size | Maximum Capacity U. S. Gallons per 24 Hours for One Distiller | | I. D. Shell Ins. | Height Ft.-Ins. | Approx. Weight Lbs. | Size of Connections (Inches) | | | Code |
|------|--|-----------------------------|------------------------|----------------------|---------------------------|------------------------------------|----------------------|--------------------------------|---------|
| | Steam at 2 Lbs. Gauge | Steam at 8 Lbs. Gauge | | | | Circu- lating Water | Vapor to Coils | Max. Drain from Coils | |
| 8 | 2800 | 5680 | 24 | 4' 5 $\frac{1}{4}$ " | 1475 | 2 $\frac{1}{2}$ | 3 | 3 | Dedace |
| 13 | 4550 | 9230 | 28 $\frac{1}{2}$ | 4' 8" | 2200 | 4 | 4 | 4 | Dedben |
| 17 | 5950 | 12070 | 31 $\frac{1}{2}$ | 4' 8 $\frac{3}{4}$ " | 2700 | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | Dedbank |

Two No. 8 Distillers are recommended for use with one double effect evaporating plant, having a combined nominal capacity of 7500 U. S. gallons per 24 hours, and an overload capacity of 40% in excess of same.

Two No. 13 Distillers are recommended for use with one double effect evaporating plant, having a combined nominal capacity of 10500 U. S. gallons per 24 hours, and an overload capacity of 40% in excess of same.

A total of two No. 17 Distillers are recommended for use with two double effect evaporating plants, having a combined nominal capacity of 25000 U. S. gallons per 24 hours, and an overload capacity of 40% in excess of same.

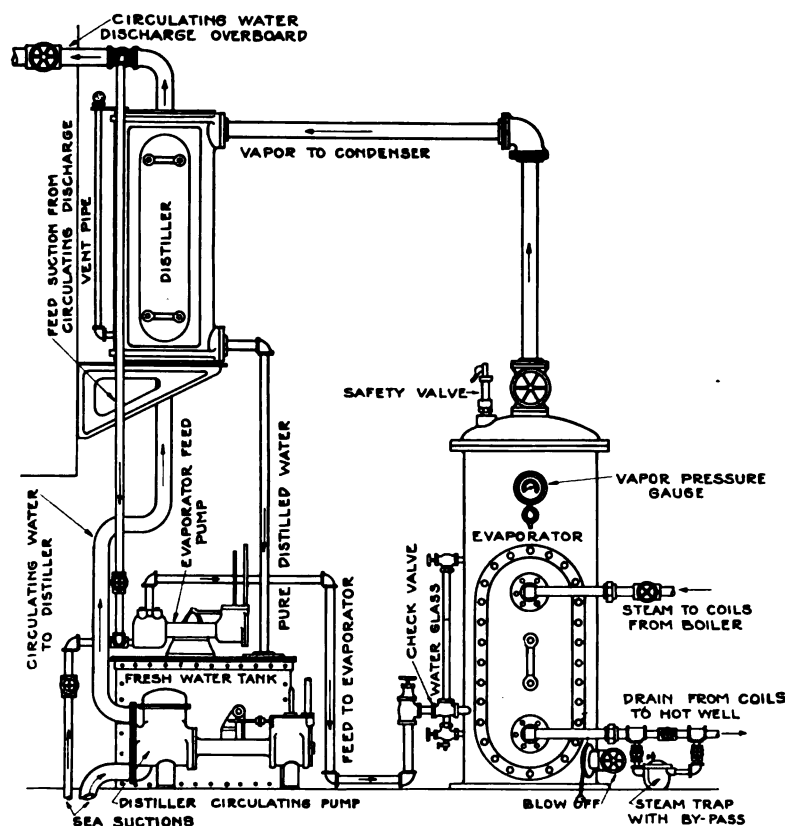
NOTE.—These Distiller capacities are based on 20 lbs. circulating water at 80° F. per pound of vapor condensed.

HYDROSTATIC TEST PRESSURES

(NOT WORKING PRESSURES)

Shell, coils and manifolds 50 lbs. per sq. in.

NO FITTINGS FURNISHED



Directions for Installing a Reilly Distiller

Install the distiller in a vertical position. It should be placed high above the evaporator and so arranged that the door may be removed for inspection of the interior of the shell.

Use as few bends and fittings in the vapor line as possible, and avoid pockets.

Arrange piping so that the condensation in the vapor pipe will drain back to evaporator.

Make the inlet circulating water connection to the bottom head of the distiller, taking the discharge circulating connection from the top head.

Tee off from this outlet connection to the evaporator feed pump suction.

M A R I N E A U X I L I A R I E S

Be sure vent pipe is properly connected to lower manifold, that this pipe is in a vertical position, secured to the distiller shell at its upper end, and that the rose head is firmly screwed on upper end of this vent pipe.

The condensed vapor from the coils of the distiller flows by gravity either through an aerating filter, which is not shown on the cut, or direct to the fresh water tank.

The circulating pump may be located wherever convenient.

Suggestions for Distilled Water Allowance on Shipboard

| | U. S. Gallons per Capita per 24 hours | | | |
|---|---------------------------------------|---------------|-------|-------|
| | Drinking and Galley | Wash Water | Total | Notes |
| U. S. Naval Vessels | 2 | 5-8 | 7-10 | A |
| British Navy | 2.35 | | | B |
| Passenger Vessels, Merchant Service . . | 3 | 2-5 | 5-8 | C |
| Emigrant Ships | 1 | 2 | 3 | |
| Freight Vessels, Merchant Service . . . | 2 | 2 | 4 | D |
| Yachts | 4 | 10 | 14 | D |
| Horses, additional capacity per animal | 10 | | 10 | E |

A—Recommendation of the Bureau of Steam Engineering, U. S. N.
Includes water for paint work and scrubbing.

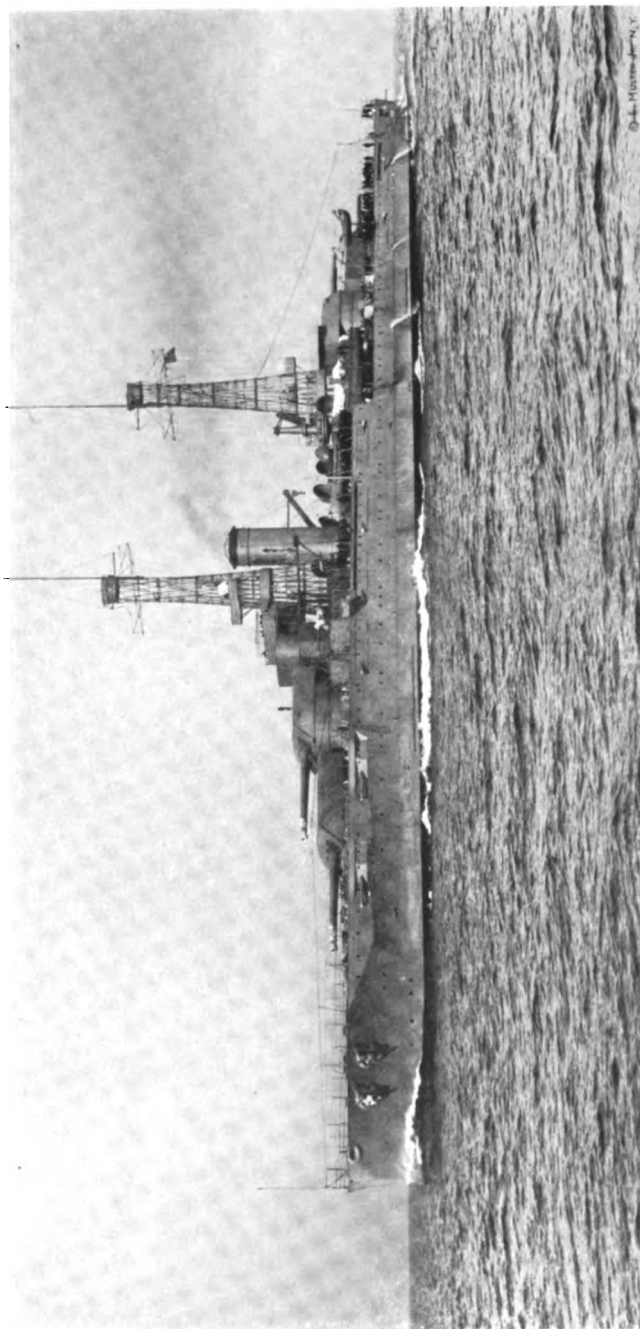
B—Mackrow & Woollard's Pocket Book.

C—British Board of Trade estimates 3.75 Imperial gallons per capita
for first and second cabin passengers for all purposes.

D—Fresh water allowance per capita should be ample when figuring
on a small number of persons.

E—Par. 299, U. S. Army Transport Service Regulations.

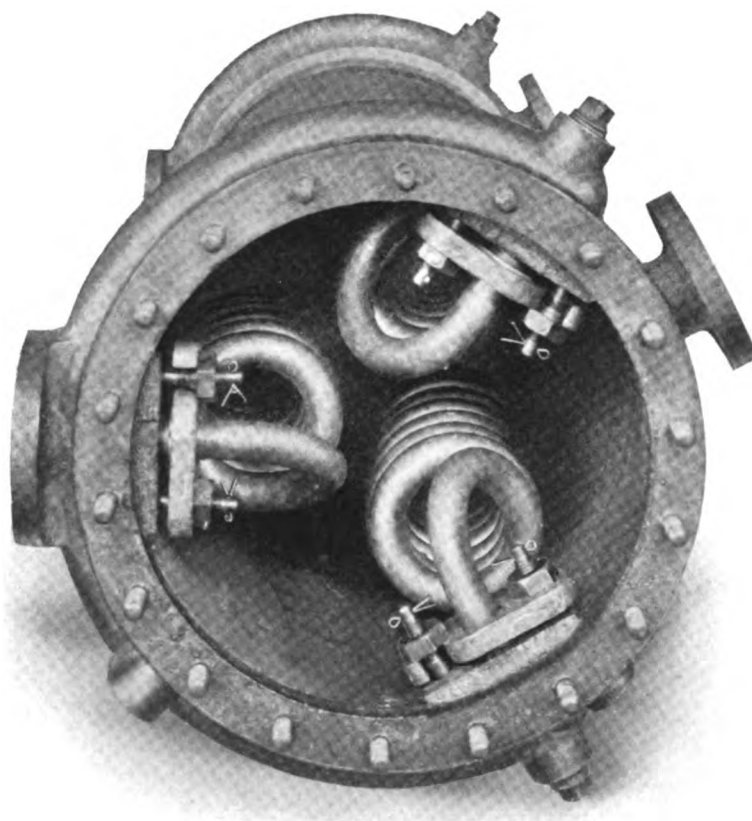
THE GRISCOM-RUSSELL COMPANY



U. S. S. NEVADA

Dyson Evaporator Feed Heater
Reilly Evaporators, Reilly Distillers, Reilly Navy Type Heater, Reilly Oil Heater

Evaporator Feed Heater Section



Use of an Evaporator Feed Heater

AN evaporator feed heater bears the same relation to an evaporator as a boiler feed water heater bears to a boiler.

The circulating water used in the distiller is heated a few degrees during its passage through the distiller and a portion of this warmed salt water is ordinarily used as evaporator feed water. This feed water may be further increased in temperature by passing it through the shell of an evaporator feed heater. Steam supplied to the coils or tubes of the evaporator feed heater from the vapor line to the distiller serves to heat this raw water. The steam or vapor condensed in the evaporator feed heater is discharged into the fresh water tank.

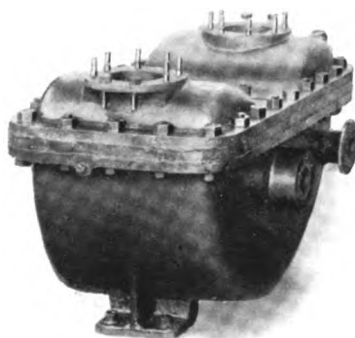
It is evident that the higher the temperature of the sea water feed entering the evaporator, the less steam is required in the coils of the evaporator; thus the use of an evaporator feed heater increases the efficiency of the evaporator plant. Furthermore, hot feed water promotes uniform conditions in an evaporator which are disturbed by irregular feeding of cold water into the evaporator shell.

Evaporator feed heaters are regularly used where double effect evaporator plants are installed on shipboard and are recommended particularly for large capacity marine evaporator plants.

Evaporator Feed Heater



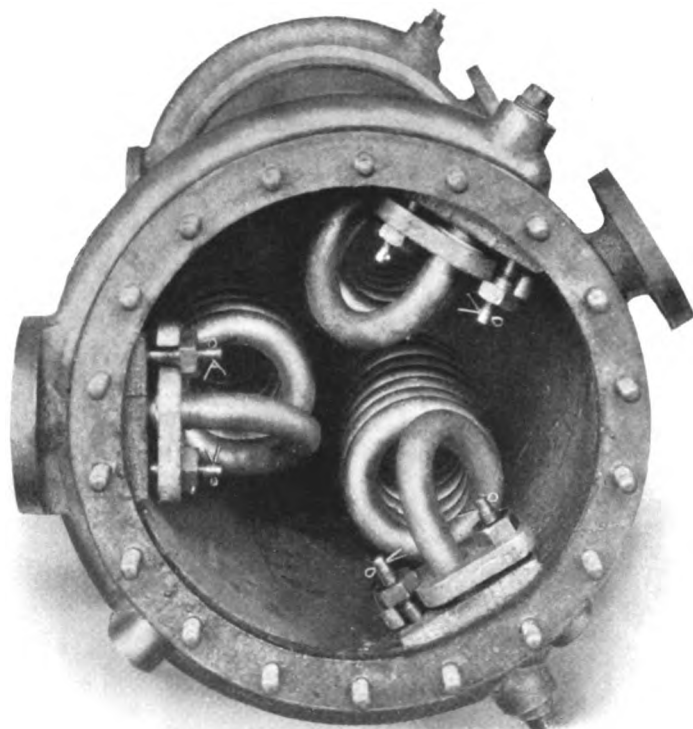
Reilly Evaporator Feed Heater
Copper Shell



Dyson Evaporator Feed Heater

THE GRISCOM-RUSSELL COMPANY

Reilly Evaporator Feed Heater Copper Shell



CONSTRUCTION

Shell of copper, tinned inside.

Removable heads of composition.

Manifolds of composition, tinned inside.

Coils of 1" outside diameter, #16 B. W. G. seamless drawn copper tubing, tinned inside and out.

Coils attached to manifolds by patented cone seat flanged connections free from brazing.

Reilly Evaporator Feed Heater Copper Shell

| Size | I. D. of Shell (Inches) | Height Ft.-Ins. | Approx. Weight Lbs. | SIZE OF CONNECTIONS (Inches) | | | Code |
|------|-------------------------------|--------------------|---------------------------|---------------------------------|-------------------|---------------------|---------|
| | | | | Feed | Vapor to Coils | Drain from Coils | |
| 3 | 13 | 3' 9" | 367 | 1½ | 2 | 2 | Fable |
| 5 | 15 | 3' 9½" | 430 | 2 | 2½ | 2½ | Fabroid |

CAPACITIES

One No. 3 Reilly Evaporator Feed Heater is suitable for use with one double effect evaporating plant having a combined nominal capacity of 7500 U. S. gallons per 24 hours, and an overload capacity of 40% in excess of same.

One No. 5 Reilly Evaporator Feed Heater is suitable for use with one double effect evaporating plant having a combined nominal capacity of 10500 U. S. gallons per 24 hours, and an overload capacity of 40% in excess of same.

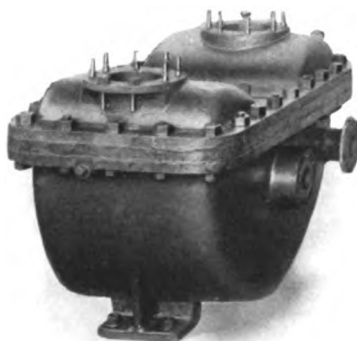
HYDROSTATIC TEST PRESSURES

(NOT WORKING PRESSURES)

Shell, coils and manifolds, 50 lbs. per square inch.

NO FITTINGS FURNISHED

Dyson Evaporator Feed Heater



CONSTRUCTION

Sizes No. 24 and 40.

Shell of copper, tinned inside.

Head of composition.

Tube sheet of composition.

Vapor baffle of brass.

Tubes of 1" outside diameter, #14 B. W. G. seamless drawn brass tubing.

Tubes expanded into tube sheets.

Size No. 28.

Shell and cover of composition.

Tube sheet of composition.

Vapor baffle of brass.

Tubes of $\frac{3}{4}$ " inside diameter #16 B. W. G. seamless drawn copper, tinned outside.

Tubes expanded into tube sheets.

M A R I N E A U X I L I A R I E S

Dyson Evaporator Feed Heater

| Size | Max. Width Ft.-Ins. | Max. Length Ft.-Ins. | I. D. of Shell Inches | Height Ft.-Ins. | Approx. Weight Lbs. | SIZE OF CONNECTIONS (Inches) | | | Code |
|------|---------------------------|----------------------------|--------------------------------|----------------------|---------------------------|---------------------------------|----------------------|------------------------|---------|
| | | | | | | Feed | Vapor to Tubes | Drain from Tubes | |
| 24 | 1' 3 $\frac{3}{4}$ " | 1' 5 $\frac{1}{8}$ " | 12 | 1' 8" | 150 | 1 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | Fabrise |
| 28 | 1' 6 $\frac{3}{4}$ " | 2' 10 $\frac{1}{4}$ " | | 1' 9 $\frac{7}{8}$ " | 945 | 2 | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | Fabric |
| 40 | 1' 5 $\frac{3}{8}$ " | 1' 6 $\frac{5}{8}$ " | 13 $\frac{7}{8}$ | 1' 10" | 240 | 1 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | 4 $\frac{1}{2}$ | Fabsmen |

CAPACITIES

One No. 24 Dyson Evaporator Feed Heater is suitable for use with one double effect evaporating plant having a combined nominal capacity of 7500 U. S. gallons per 24 hours, and an overload capacity of 40% in excess of same.

No. 28 Dyson Evaporator Feed Heater is intended for special service.

One No. 40 Dyson Evaporator Feed Heater is suitable for use with one double effect evaporating plant having a combined nominal capacity of 10500 U. S. gallons per 24 hours, and an overload capacity of 40% in excess of same.

HYDROSTATIC TEST PRESSURES

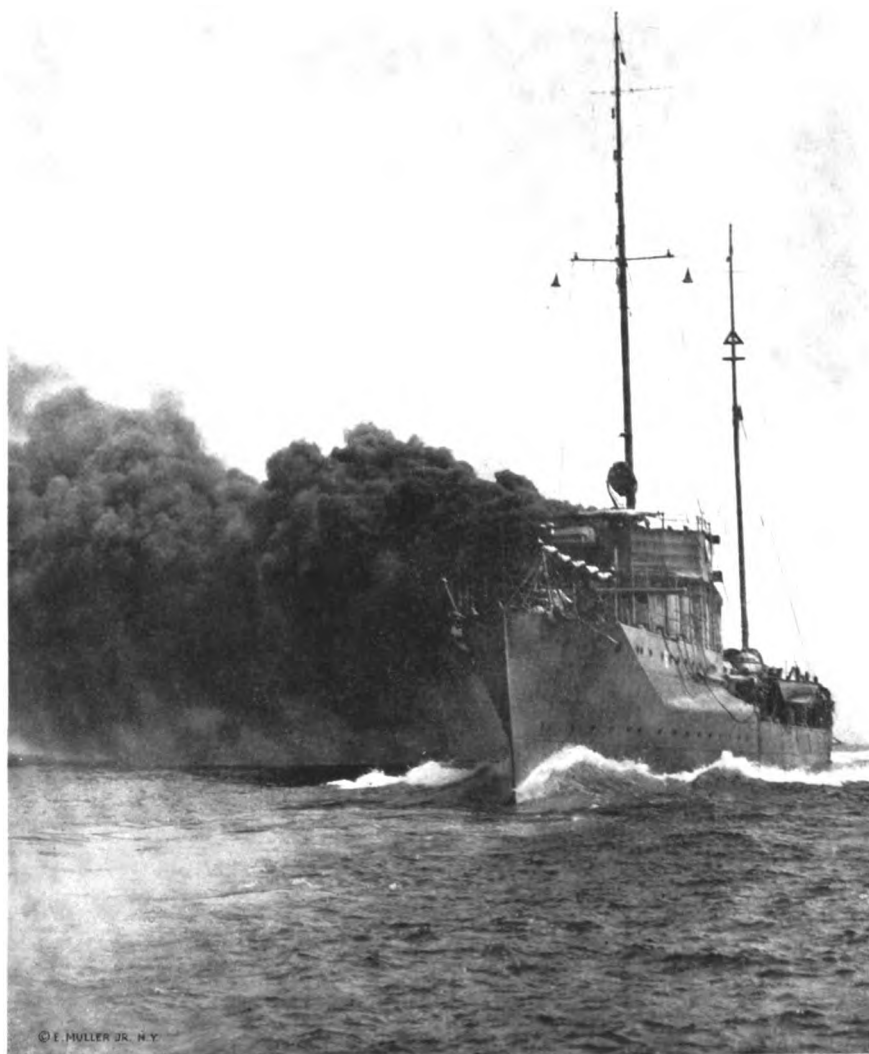
(NOT WORKING PRESSURES)

Shell, 100 lbs. per square inch.

Tubes and head, 75 lbs. per square inch.

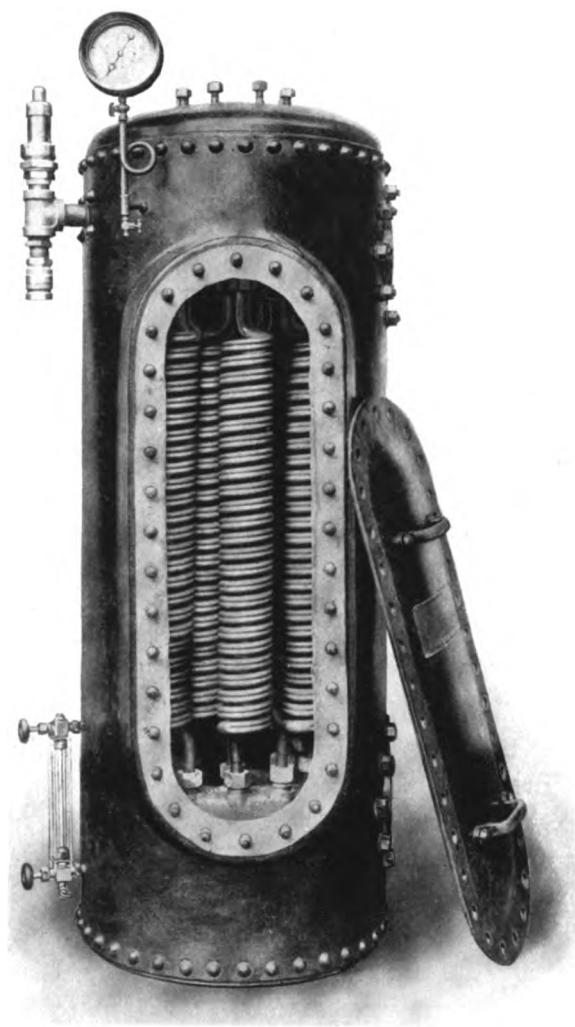
NO FITTINGS FURNISHED

THE GRISCOM-RUSSELL COMPANY



U. S. DESTROYER McDOUGAL
Reilly Navy Type Heater

Feed Water Heater Section



Feed Water Heating

THE prime function of a boiler is to generate steam, not to heat water. If cold feed water is supplied to a boiler, it is not only forced to do work which could be done better elsewhere, but also its efficiency as a steam generator is seriously impaired, and its life shortened.

Every well ordered marine power plant should include a Reilly Feed Water Heater as an essential part of its equipment. The following are the reasons for providing for feed water heating:

- Economy of fuel.
- Increase of Boiler Capacity.
- Increase of Effective Condenser Capacity.
- Saving in the cost of Boiler Maintenance.
- Increased Life of Boiler.

As a result of properly heating the feed water, the fuel savings and the increase of maximum boiler capacity will vary from 8 per cent. to 15 per cent., depending upon the conditions of installation.

It may be stated in round numbers that 1 per cent. less coal is required, and the maximum boiler capacity is increased 1 per cent. for every 11 degrees the feed water is heated before being delivered to the boilers. In plants in which the auxiliary exhaust is at present led direct to the main condenser, it should be passed through a heater first, increasing the effective condenser capacity 1 per cent. for every 11 degrees increase in feed temperature.

How to Compute the Savings Resulting from the Use of a Proper Feed Water Heater

ASSUME a condensing plant in which the temperature to the boiler is 100 degrees, and the steam pressure 175 lbs.

By reference to the Steam Tables in any Engineers' Hand-Book it is seen that the temperature of steam at 175 lbs. pressure is 377.6 degrees F. and the Latent Heat is 846.9 B. T. U. (*i. e.*, the quantity of heat required to vaporize one pound of water when it has already been raised to the temperature of the steam). Now to raise one pound of water from 100 degrees to 377.6 degrees requires 277.6 B. T. U. Therefore, the total heat required to change a pound of feed water into steam under these conditions will be the sum of 277.6 plus 846.9 or 1124.5 B. T. U. and of this amount 24.6 per cent. is taken up in merely heating the water.

If, however, the water passed first through a proper heater, its temperature might be raised from 100 degrees to 230 degrees, thus saving 130 B. T. U. per pound of steam generated and saving $\frac{130}{1124.5}$ or 11.5 per cent. of the heat needed to make an equal amount of steam when not using the heater. Consequently, there will be a saving of fuel of 11.5 per cent., or the maximum boiler capacity and effective condenser capacity will each be increased by this same percentage.

Reilly Feed Water Heater

GENERAL DESCRIPTION

Reilly Feed Water Heaters are furnished with either steel or cast iron shells. The heating surface is uniform in either type, and consists of Reilly coils of a form standardized through many years service.



The helical construction of the coils imparts a whirling motion to the water, and centrifugal force throws the water particles near the center of the tubes to the outside, while those on the outside are in turn displaced and returned to the center.

The tubing is crimped throughout its length with the object of further assisting in the breaking up of the body of water flowing through the coils. This rapid agitation of the water results in remarkably high heat transfer. Sluggish flow, dead tubes and air pockets are impossible.

The water passes through the tubes and the steam is supplied to the shell.

The coils are interchangeable and identical in size; therefore, each does the same proportionate part of the heating.

The coils are attached to ring manifolds by patented copper face union joints free from brazing. This makes a tight connection, eliminating any possibility of leaks.

All Reilly Heater shells are made with a large door opening, which permits of free access to all internal parts and connections without the necessity of disconnecting the water or steam piping.

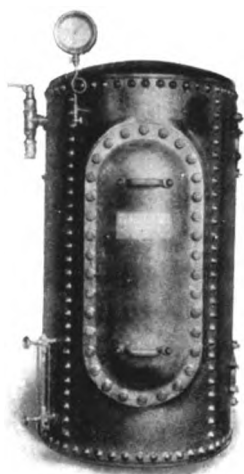
This shell opening is covered by a substantial pressed steel door sufficiently light, even in the largest heaters, for one man to handle it readily. The door is slightly dished so as to conform in a general way to the curvature of the shell, thereby increasing its strength and lending a pleasing appearance to the whole.

The heating surface can be inspected while under pressure, before the heater is placed in service.

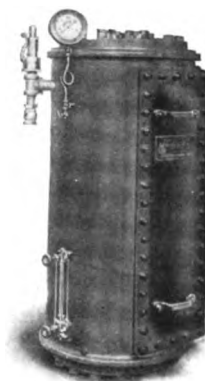
The coil construction permits of a very compact unit, thus economizing deck space.



Reilly Feed Water Heater



Reilly Navy Type Heater
Single Pass



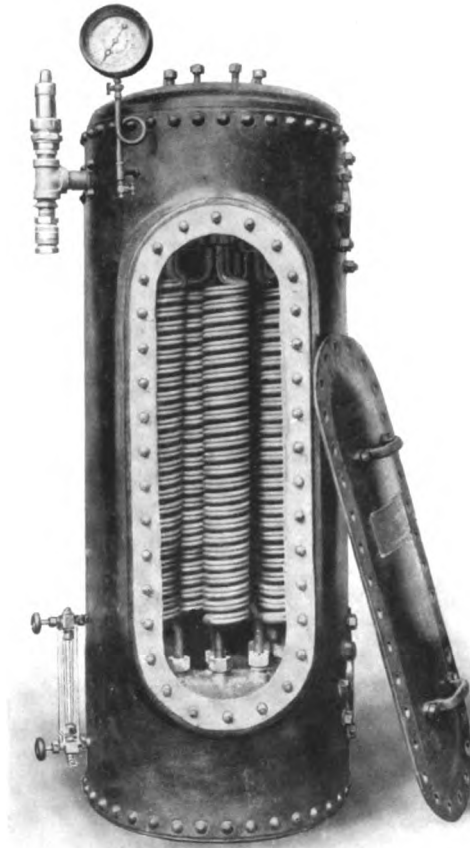
Reilly Type D Marine Heater
Single Pass



Reilly Type D Marine Heater
Two Pass

THE GRISCOM-RUSSELL COMPANY

Reilly Navy Type Heater Single Pass



CONSTRUCTION

Shell of boiler steel.

Heads, door frame, and door of flange steel.

Manifolds of composition or cast iron.

Coils of 1" outside diameter #16 B. W. G. seamless drawn copper tubing, crimped.

Coils attached to manifolds by patented copper face union joints, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Navy Type Heater Single Pass

| Size | I. D. Shell Inches | Height Ft.-Ins. | Center to Center Feed Con- nections Ft.-Ins. | Approx. Weight With Fittings Lbs. | SIZE OF CONNECTIONS (Inches) | | | | | | Code |
|------|--------------------------|--------------------|--|---|---------------------------------|--------------|----------------|-----------------|-----------------|-------|----------|
| | | | | | Max. Feed | Std. Feed | Steam Inlet | Steam Outlet | Safety Valve | Drain | |
| 8 | 16½ | 5' 4½" | 3' 9" | 683 | 2½ | 2 | 4 | 3 | 1¼ | 1½ | Henbane |
| 10 | 20 | 5' 6¾" | 3' 9" | 875 | 3 | 2½ | 4 | 3 | 1¼ | 1½ | Henbill |
| 12 | 22 | 5' 7" | 3' 9" | 1080 | 3 | 2½ | 5 | 3½ | 1½ | 1½ | Henbit |
| 14 | 22 | 5' 7" | 3' 9" | 1130 | 3 | 2½ | 5 | 3½ | 1½ | 1½ | Henbuck |
| 16 | 25 | 5' 9½" | 3' 10" | 1220 | 3½ | 3 | 6 | 4 | 1½ | 1½ | Hencavey |
| 19 | 25 | 5' 9½" | 3' 10" | 1300 | 3½ | 3 | 6 | 4 | 1½ | 1½ | Hencoil |
| 25 | 30 | 5' 11½" | 3' 10" | 1770 | 4 | 3½ | 7 | 5 | 2½ | 2 | Hencote |
| 27 | 30 | 5' 11½" | 3' 10" | 1800 | 4 | 3½ | 7 | 5 | 2½ | 2 | Hendeca |
| 30 | 32 | 6' 0¼" | 3' 10" | 1900 | 4½ | 4 | 7 | 5 | 2½ | 2 | Hendiad |
| 39 | 36 | 6' 1" | 3' 10" | 2630 | 5 | 4½ | 8 | 6 | 2½ | 2 | Henequen |
| 47 | 40 | 6' 3½" | 3' 10" | 3000 | 6 | 5 | 9 | 7 | 3 | 2½ | Henghen |
| 54 | 44 | 6' 5" | 3' 10" | 3500 | 6 | 5 | 9 | 7 | 3 | 2½ | Hennish |
| 67 | 48 | 6' 7¼" | 3' 10" | 4600 | 7 | 5 | 10 | 8 | 3 | 3 | Henogeny |
| 77 | 52 | 6' 6½" | 3' 10" | 4800 | 7 | 6 | 12 | 10 | 3½ | 3 | Henotan |
| 86 | 56 | 6' 8" | 3' 10" | 5370 | 7 | 6 | 12 | 10 | 3½ | 3 | Henting |
| 103 | 60 | 6' 10¼" | 3' 10" | 6350 | 7 | 6 | 14 | 12 | 4 | 3 | Henryman |

MAXIMUM WORKING PRESSURES

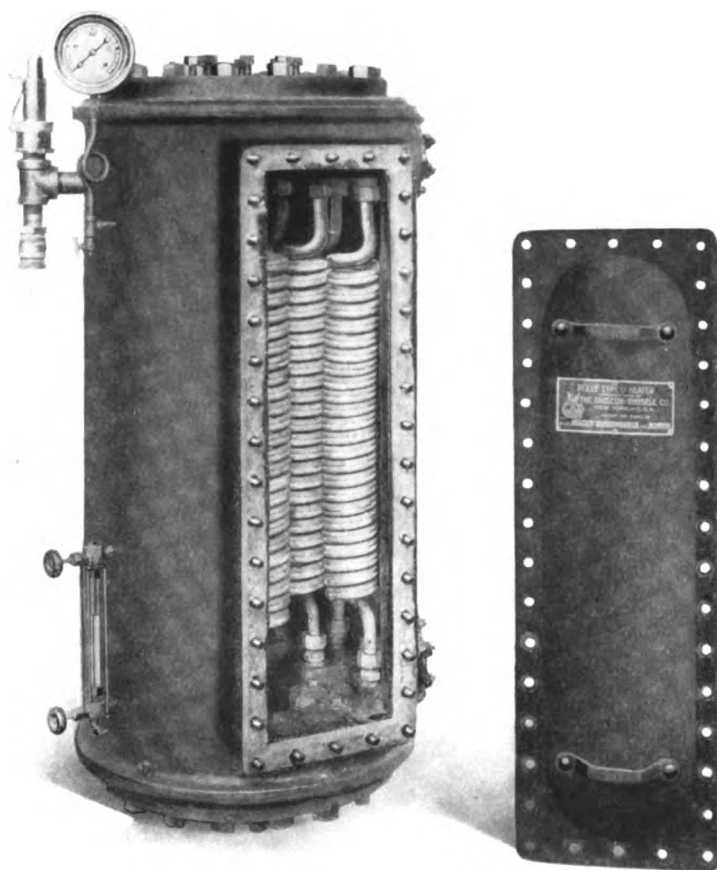
Shell, 25 lbs. per square inch.

Coils and manifolds, 300 lbs. per square inch.

FITTINGS FURNISHED

Safety valve, vacuum breaker, pressure gauge, water gauge glass and fittings, brass case thermometer, automatic back pressure regulating valve.

Reilly Type D Marine Heater Single Pass



CONSTRUCTION

Shell and manifolds of close grain cast iron, cast in one piece.

Door of flange steel.

Coils of 1" outside diameter #16 B. W. G. seamless drawn copper tubing, crimped.

Coils attached to manifolds by patented copper face union joints, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Type D Marine Heater Single Pass

| Size | I. D. Shell Inches | Height Ft.-Ins. | Center to Center Feed Connections Ft.-Ins. | Approx. Weight With Fittings Lbs. | SIZE OF CONNECTIONS (Inches) | | | | | | Code |
|------|--------------------------|----------------------|--|---|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------|
| | | | | | Max. Feed | Std. Feed | Steam Inlet | Steam Outlet | Safety Valve | Drain | |
| 1 | 6 | 4' 4 $\frac{1}{2}$ " | 3' 10 $\frac{1}{2}$ " | 370 | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1 | 1 $\frac{1}{2}$ | 1 | Hedakey |
| 2 | 10 | 4' 4 $\frac{3}{4}$ " | 3' 10 $\frac{1}{2}$ " | 670 | 2 | 1 $\frac{1}{2}$ | 2 | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 1 | Hedchiz |
| 3 | 14 | 4' 4 $\frac{3}{4}$ " | 3' 10 $\frac{1}{2}$ " | 940 | 2 $\frac{1}{2}$ | 2 | 2 | 1 $\frac{1}{2}$ | 3 $\frac{1}{4}$ | 1 | Hederal |
| 4 | 14 | 4' 4 $\frac{3}{4}$ " | 3' 10 $\frac{1}{2}$ " | 970 | 2 $\frac{1}{2}$ | 2 | 2 $\frac{1}{2}$ | 2 | 3 $\frac{3}{4}$ | 1 | Hedfast |
| 5 | 14 | 4' 4 $\frac{3}{4}$ " | 3' 10 $\frac{1}{2}$ " | 1010 | 2 $\frac{1}{2}$ | 2 | 3 | 2 | 1 | 1 | Hedland |
| 6 | 16 $\frac{1}{2}$ | 4' 5" | 3' 10 $\frac{1}{2}$ " | 1270 | 2 $\frac{1}{2}$ | 2 | 3 | 2 | 1 | 1 $\frac{1}{2}$ | Hedlait |
| 7 | 16 $\frac{1}{2}$ | 4' 5" | 3' 10 $\frac{1}{2}$ " | 1310 | 2 $\frac{1}{2}$ | 2 | 3 $\frac{1}{2}$ | 2 $\frac{1}{2}$ | 1 | 1 $\frac{1}{2}$ | Hedline |
| 8 | 18 | 4' 5 $\frac{1}{8}$ " | 3' 7 $\frac{1}{2}$ " | 1470 | 3 | 2 $\frac{1}{2}$ | 4 | 3 | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | Hedmost |
| 10 | 20 | 4' 5 $\frac{3}{4}$ " | 3' 8" | 1770 | 3 | 2 $\frac{1}{2}$ | 4 | 3 | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | Hedrait |
| 12 | 21 $\frac{1}{2}$ | 4' 8 $\frac{1}{4}$ " | 3' 9" | 1950 | 3 $\frac{1}{2}$ | 3 | 5 | 3 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | Hedship |
| 15 | 25 | 4' 8" | 3' 8 $\frac{1}{2}$ " | 2410 | 3 $\frac{1}{2}$ | 3 | 5 | 3 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | Hedston |
| 18 | 25 | 4' 8" | 3' 8 $\frac{1}{2}$ " | 2480 | 3 $\frac{1}{2}$ | 3 | 6 | 4 | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | Hedways |
| 22 | 31 $\frac{1}{2}$ | 4' 9 $\frac{3}{4}$ " | 3' 7 $\frac{1}{2}$ " | 3670 | 4 | 3 $\frac{1}{2}$ | 6 | 4 | 2 $\frac{1}{2}$ | 2 | Hedwurk |
| 26 | 31 $\frac{1}{2}$ | 4' 9 $\frac{3}{4}$ " | 3' 7 $\frac{1}{2}$ " | 3760 | 4 $\frac{1}{2}$ | 4 | 7 | 5 | 2 $\frac{1}{2}$ | 2 | Hedzman |

MAXIMUM WORKING PRESSURES

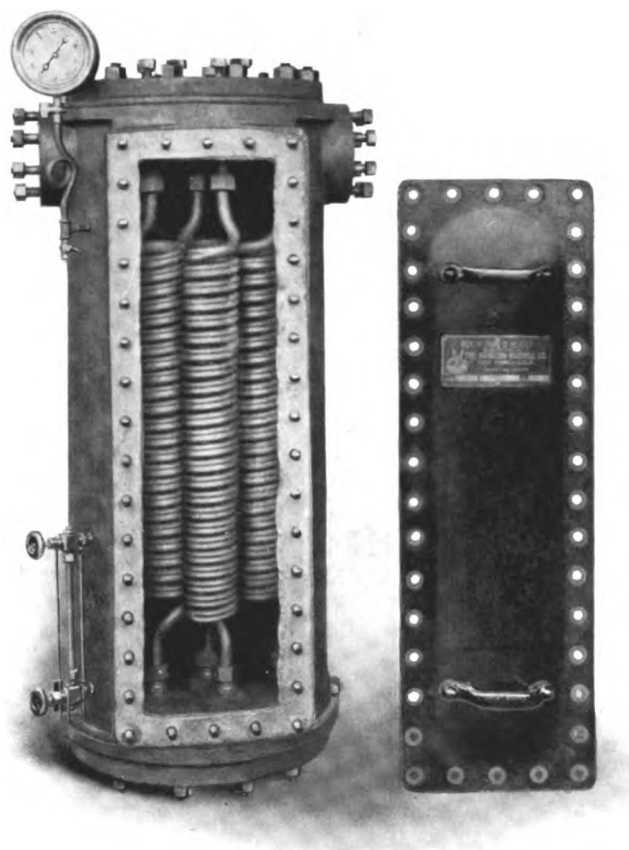
Shell, 25 lbs. per square inch.

Coils and manifolds, 300 lbs. per square inch.

FITTINGS FURNISHED

Safety valve, vacuum breaker, pressure gauge, water gauge glass and fittings, brass case thermometer, automatic back pressure regulating valve.

Reilly Type D Marine Heater Two Pass



CONSTRUCTION

Shell and manifolds of close grain cast iron, cast in one piece.

Door of flange steel.

Coils of 1" outside diameter #16 B. W. G. seamless drawn copper tubing, crimped.

Coils attached to manifolds by patented copper face union joints, free from brazing.

M A R I N E A U X I L I A R I E S

Reilly Type D Marine Heater Two Pass

| Size | I. D. Shell Inches | Height Ft.-Ins. | Face to Face Feed Con- nections Ft.-Ins. | SIZE OF CONNECTIONS (Inches) | | | | | | Approx. Weight With Fittings Lbs. | Code |
|------|--------------------------|----------------------|---|------------------------------|-----------------|--------------------------------|--------------------------------|-----------------|-----------------|---|---------|
| | | | | Max. Feed | Std. Feed | Max. Steam In and Out | Std. Steam In and Out | Drain | Safety Valve | | |
| 2 | 10 | 4' 5 $\frac{1}{4}$ " | 1' 1 $\frac{1}{2}$ " | 2 | 1 | 8 | 2 $\frac{1}{2}$ | 1 | 1 $\frac{1}{2}$ | 670 | Hepace |
| 4 | 14 | 4' 5 $\frac{1}{4}$ " | 1' 4 $\frac{1}{2}$ " | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 8 | 3 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 3 $\frac{3}{4}$ | 970 | Hepbent |
| 6 | 16 $\frac{1}{2}$ | 4' 5 $\frac{3}{8}$ " | 1' 7 $\frac{1}{4}$ " | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 10 | 4 | 1 $\frac{1}{4}$ | 1 | 1270 | Hepbord |
| 8 | 18 | 4' 5 $\frac{1}{2}$ " | 1' 9 $\frac{1}{4}$ " | 3 | 2 | 12 | 4 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1470 | Hepbun |
| 10 | 20 | 4' 6 $\frac{1}{4}$ " | 2' 1" | 3 | 2 $\frac{1}{2}$ | 14 | 5 | 2 | 1 $\frac{1}{4}$ | 1770 | Hepdam |
| 12 | 21 $\frac{1}{2}$ | 4' 8" | 2' 1" | 3 $\frac{1}{2}$ | 2 $\frac{1}{2}$ | 14 | 6 | 2 | 1 $\frac{1}{2}$ | 1950 | Hepdex |
| 18 | 25 | 4' 8 $\frac{3}{8}$ " | 2' 4 $\frac{1}{4}$ " | 3 $\frac{1}{2}$ | 3 | 16 | 7 | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 2480 | Hepdock |
| 26 | 31 $\frac{1}{2}$ | 4' 9 $\frac{5}{8}$ " | 3' 0 $\frac{1}{4}$ " | 4 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | 18 | 9 | 3 | 2 $\frac{1}{2}$ | 3760 | Hepdict |

WORKING PRESSURES

Shell, 25 lbs. per square inch.

Coils and manifolds, 300 lbs. per square inch.

FITTINGS FURNISHED

Safety valve, vacuum breaker, pressure gauge, water gauge glass and fittings, brass case thermometer, automatic back pressure regulating valve.

THE GRISCOM-RUSSELL COMPANY

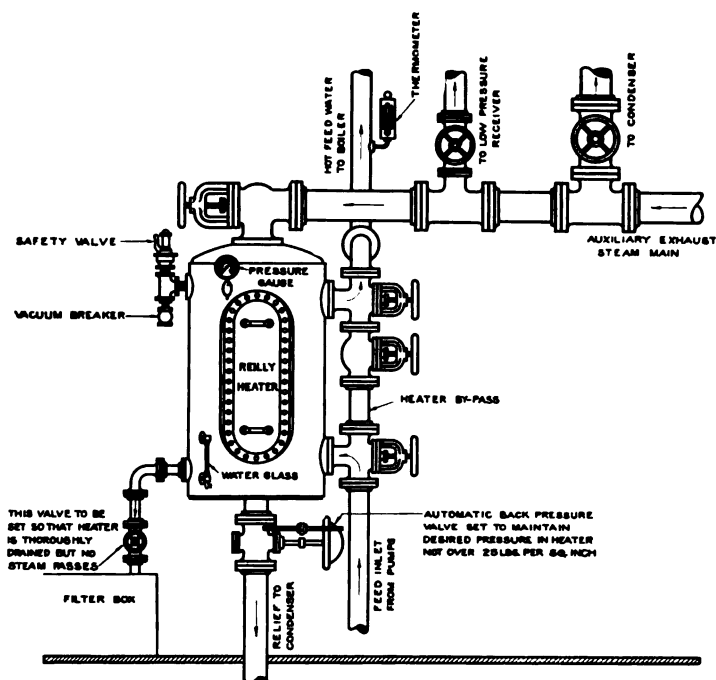


Diagram and Instructions for Connecting Up Reilly Feed Water Heater

FOR THOROUGHFARE TYPE INSTALLATION

Place heater in position convenient to feed pump and filter box, with bottom of heater above surface of water in filter box. Connect main feed line on delivery side of main feed pump to feed inlet of heater and run pipe from the feed outlet to the boilers. Bypass the heater as indicated. Run auxiliary exhaust main to top of heater and fit same with stop valve. Connect bottom of heater with main engine condenser, or atmospheric connection, placing the automatic back pressure valve in this line. The condenser connection should be run into the side of condenser and be fitted with a stop valve. This connection must be at or below the level of bottom of heater.

Run another pipe from drain connection to filter box with stop valve or steam trap in line. This drain line is for the purpose of removing the condensation from heater shell.

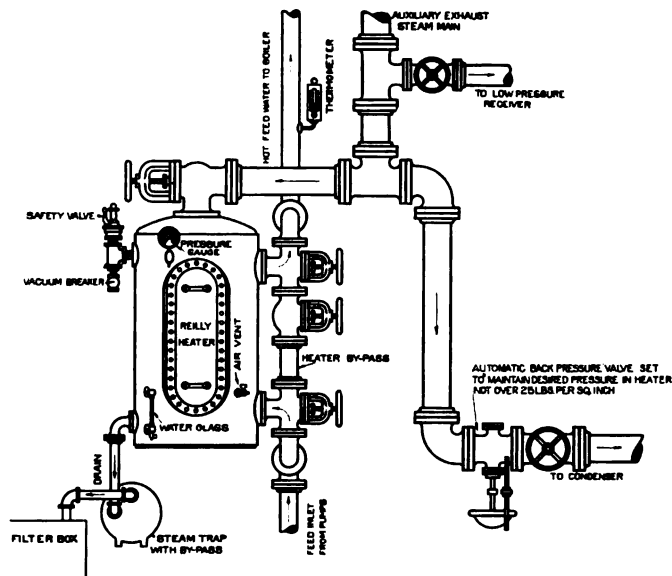


Diagram and Instructions for Connecting Up Reilly Feed Water Heater

FOR INDUCTION TYPE INSTALLATION

Place heater in position convenient to feed pump and filter box, with bottom of heater above surface of water in filter box. Connect main feed line on delivery side of main feed pump to feed inlet of heater and run pipe from feed outlet to the boilers. Bypass the heater as indicated.

Run a branch line from auxiliary exhaust main to top of heater and fit same with stop valve. Install an automatic back pressure valve in the auxiliary exhaust main at a point between the branch line connection to the heater, and the condenser.

Run a pipe from bottom drain connection of heater to filter box, with steam trap in line. This drain line is for the purpose of removing the condensation from the shell.

In this type of installation it is very important that heater shell is kept vented of air. Tap a hole in side of heater shell about twelve inches above bottom drain connection and keep air bleeding freely from same at all times. The use of an automatic air vent is recommended.

Reasons for the Desirability of Using an Automatic Back Pressure Valve in a Feed Water Heater Installation

In general, the use of an automatic back pressure valve in a feed water heater installation insures uniform operation of the heater at its maximum capacity at all times. It also provides constant back pressure on auxiliaries.

THOROUGHFARE TYPE INSTALLATION

In this type of installation, the automatic back pressure valve is placed on the exhaust outlet between heater and condenser. All exhaust steam from the auxiliaries enters the heater at the top, and the excess steam over that used in heating the feed water, passes through the back pressure valve to the condenser.

The back pressure valve is set to maintain any desired pressure in the heater shell. The pressure usually ranges from three to fifteen pounds gauge. When the pressure tends to build up above that for which the valve is set, the valve automatically opens and allows the excess steam to blow through to the condenser. When the pressure thus relieved drops slightly below the setting of the valve, the compression spring closes the valve and maintains uniform conditions.

INDUCTION TYPE INSTALLATION

In this type of installation, the auxiliary exhaust line runs direct to the condenser with a branch connection leading to top of heater. An automatic back pressure valve is placed in the exhaust line between the condenser and the branch to the heater. This forces into the heater only such an amount of steam as the heater will condense. The automatic operation of the valve is similar to that in a thoroughfare type of installation, maintaining a constant pressure in the heater shell and releasing any excess steam to the condenser.

AUTOMATIC BACK PRESSURE VALVE FURNISHED WITH REILLY HEATERS

Such a valve is furnished as part of the standard equipment of every Reilly Marine Heater. The valve furnished is of the diaphragm type which maintains a pressure on the heater side and a vacuum on the condenser side, absolutely independent of each other. A spring loaded type of valve is not recommended.

Reilly Heater

WHEN REQUESTING PRICES OR ORDERING

THE FOLLOWING INFORMATION MUST BE GIVEN

1. Feed water to boilers (pounds per hour).
2. Present temperature of hot well.
3. Steam pressure on auxiliary steam line.
4. Maximum allowable water pressure drop through heater.
5. If feed pump is mechanically actuated by main engines, give full details of size, type and maximum possible speed.

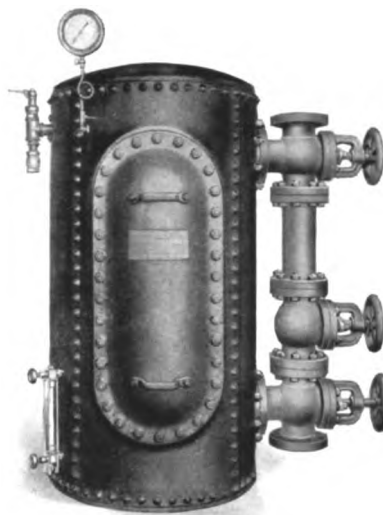
IT IS DESIRABLE THAT THE FOLLOWING INFORMATION BE GIVEN ALSO

6. Name of ship.
7. Type and size of main engines.
8. Revolutions of engines, full power.
9. Number of main boilers.
10. Horse power of main boilers.
11. Grate surface of each boiler.
12. Indicated horse power of main engine.
13. Steam pressure at boilers.
14. Diameter of main feed pipes.
15. Diameter of auxiliary exhaust line.
16. Size of steam and exhaust connections of
 - Circulating pumps
 - Feed pumps
 - Air pumps
 - Sanitary pumps
 - Blower engines
 - Dynamo engines
17. Draft. (Natural or forced).
18. Kind of fuel.

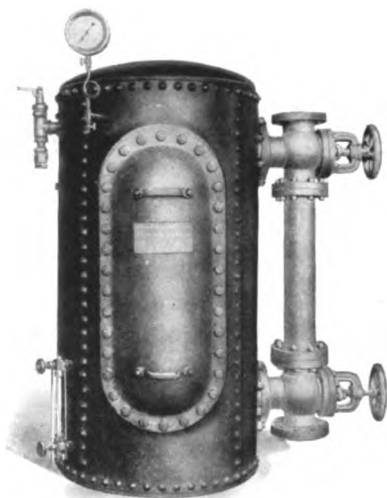
Reilly Heater Bypass Valves

It is essential that every feed water heater be piped up to provide a bypass for the feed water, assuring an uninterrupted flow of water to the boilers when it is necessary to inspect or repair the heater.

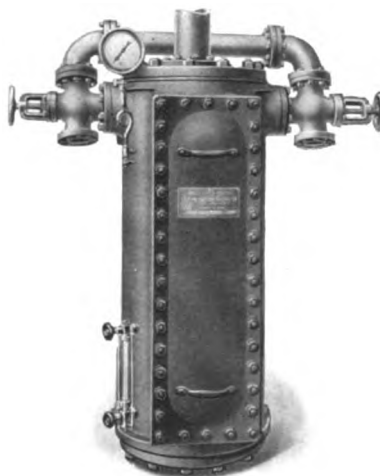
Bypass Valve Sets can be supplied as an extra for any Reilly Feed Water Heater, and in the following combinations.



Method of bypassing SINGLE PASS HEATER by the use of two cross valves, one globe valve and a distance piece.



Method of bypassing SINGLE PASS HEATER by the use of one three-way valve, one cross valve and a distance piece.



Method of bypassing TWO PASS HEATER by the use of two three-way valves, two elbows and a distance piece.

M A R I N E A U X I L I A R I E S

Reilly Heater Bypass Valves

| Size of Valve | Weights of Bypass Valve Sets (Lbs.) | | | | | | Dimensions of Valves (Inches) | |
|---------------|--|------------------|---|------------------|----------------------------|------------------|-------------------------------|----------------------|
| | For Single Pass Heater | | | | For Two Pass Heater | | Center to Face | Center to Open Wheel |
| | Using Two Cross Valves One Globe Valve | | Using One Cross Valve One Three Way Valve | | Using Two Three Way Valves | | | |
| | Com-position Body Valves | Iron Body Valves | Com-position Body Valves | Iron Body Valves | Com-position Body Valves | Iron Body Valves | | |
| 1½ (s) | 44 | 40 | 36 | 33 | 37 | 32 | | |
| 2 (s) | 55 | 49 | 47 | 42 | 55 | 48 | 3⅜ | 11⅝ |
| 2 | 215 | 190 | 185 | 165 | 230 | 205 | 4⅜ | 12¼ |
| 2½ | 270 | 240 | 230 | 200 | 305 | 265 | 5⅝ | 12⅜ |
| 3 | 340 | 310 | 270 | 245 | 375 | 335 | 6⅞ | 14¼ |
| 3½ | 425 | 385 | 350 | 310 | 480 | 420 | 6⅞ | 14¾ |
| 4 | 510 | 460 | 450 | 405 | 580 | 535 | 6⅞ | 15⅞ |
| 4½ | 610 | 540 | 530 | 480 | 720 | 650 | 7⅝ | 17¼ |
| 5 | 695 | 615 | 620 | 565 | 840 | 755 | 7⅝ | 18⅞ |
| 6 | 795 | 705 | 730 | 660 | 1020 | 910 | 8⅝ | 20¼ |
| 7 | 870 | 770 | 830 | 750 | 1185 | 1070 | 9⅝ | 21⅞ |
| 8 | 970 | 860 | 925 | 835 | 1365 | 1215 | 10½ | 23¾ |

(s)—denotes screwed valves. All others are flanged.

NOTE.—Weights in table are for the complete bypass sets which include valves and distance piece for single pass heaters, and valves, elbows and distance piece for two pass heaters.

CONSTRUCTION

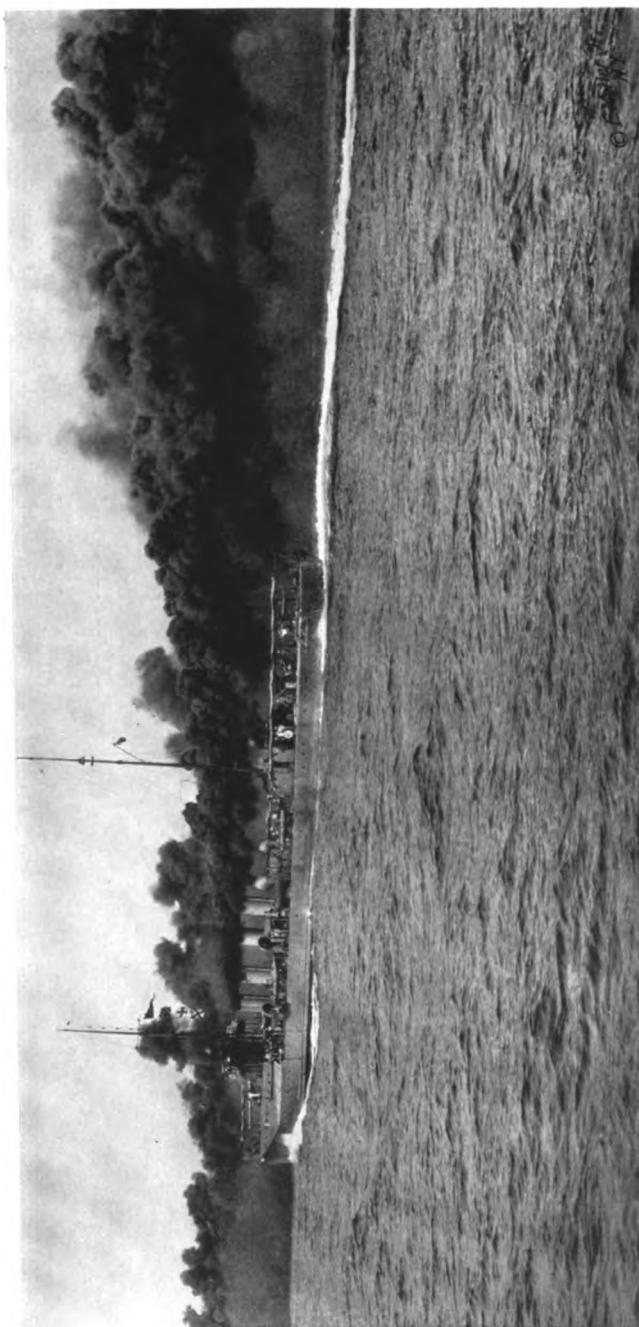
Supplied in either of the following styles :

1. Full composition body valves with copper distance piece, (and composition elbows, for two pass heaters only).
2. Cast iron body valves with extra heavy lap welded steel pipe distance piece, (and cast iron elbows, for two pass heaters only).

MAXIMUM WORKING PRESSURES

250 lbs. per square inch.

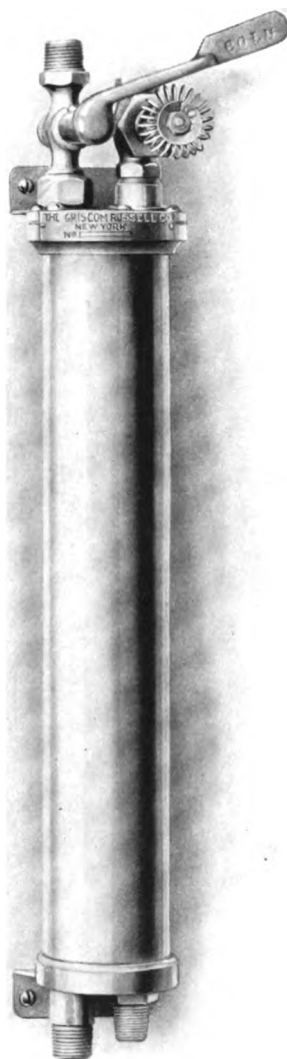
THE GRISCOM-RUSSELL COMPANY



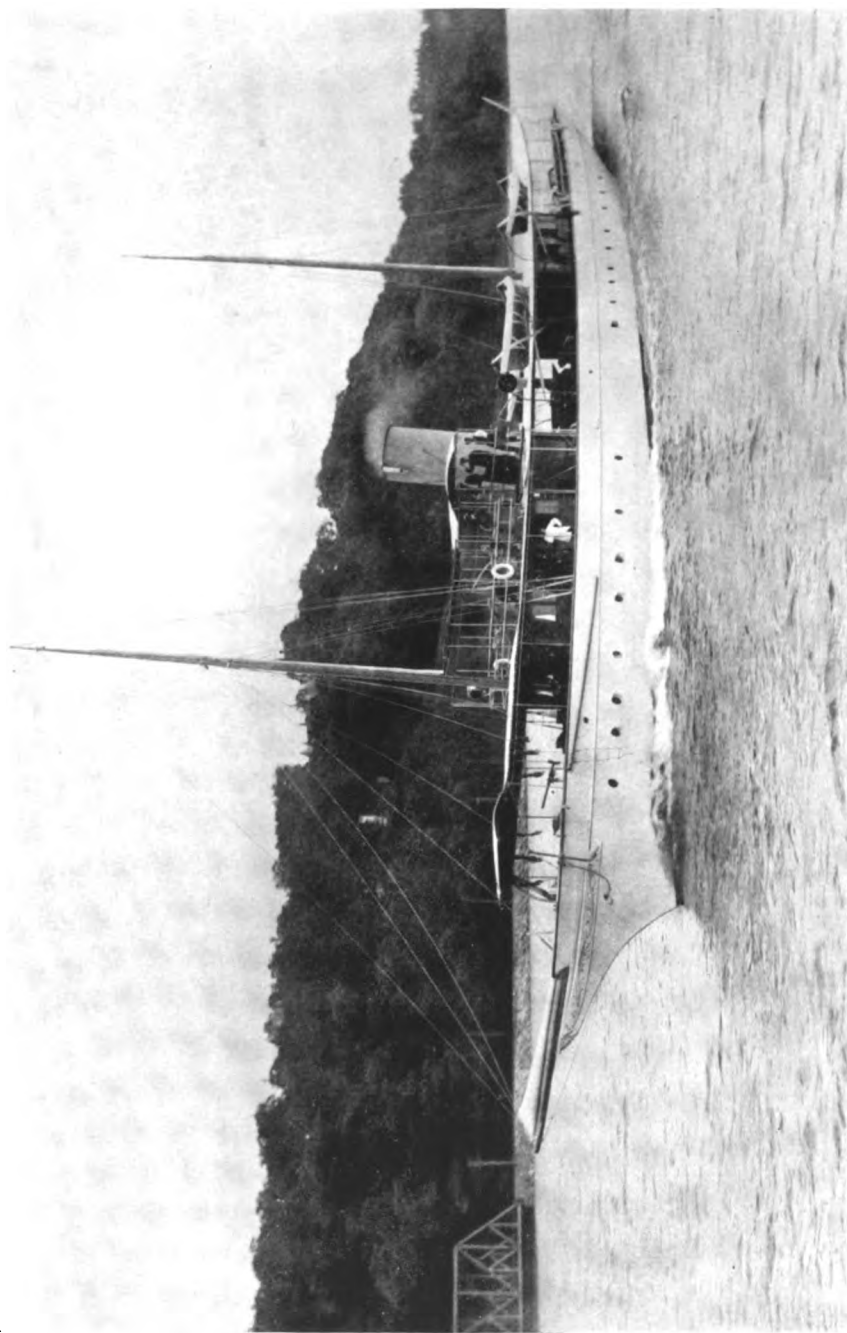
U. S. DESTROYER CASSIN
Reilly Navy Type Heater

M A R I N E A U X I L I A R I E S

Reilly Section Bath Heater



THE GRISCOM-RUSSELL COMPANY



Many Yachts and Passenger Vessels are equipped with Reilly Bath Heaters

M A R I N E A U X I L I A R I E S

Reilly Bath Heater

The Reilly Bath Heater is intended for heating the small quantities of water used in lavatories and baths. It supplies hot or cold water from a single service pipe.

To operate the heater it is necessary to first turn on the water by the handle shown at top, thereby allowing cold water to enter the cylinder. The steam can then be turned on until the desired water temperature is secured. The steam passes through the coil and out at the lower end as condensation. The hot water supply is also drawn off at the bottom of the shell.

It is impossible for a person to become scalded with this apparatus because the cold water valve handle in its closed position locks the wheel of the steam valve closed. Therefore steam cannot be turned on without first turning on the water and further the steam valve must be closed before the water can be turned off.



CONSTRUCTION

Shell of Lavatory Size; brass, nickel plated.

Shell of Bath Size; brass, nickel plated, or galvanized steel.

Coil of $\frac{5}{8}$ " outside diameter #18 B. W. G. seamless drawn copper tubing.

| Size | Capacity U. S. Gallons per hour | I. D. Shell Inches | Height Ft.-Ins. | SIZE OF CONNECTIONS (Inches) | | | Approx. Weight Lbs. | Code |
|--------------------------------|--|--------------------------|----------------------|---------------------------------|---------------|---------------|---------------------------|--------|
| | | | | Steam | Drain | Water | | |
| Lavatory Size | 15 | 2 $\frac{1}{2}$ | 1' 8 $\frac{1}{2}$ " | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{3}{8}$ | 10 | Bodeck |
| Bath Size, Brass Shell Type | 30 | 3 $\frac{1}{2}$ | 2' 4 $\frac{1}{2}$ " | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | 20 | Bodum |
| Bath Size, Steel Shell Type | 30 | 3 $\frac{1}{2}$ | 2' 3 $\frac{1}{8}$ " | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{3}{4}$ | 35 | Bodway |

CAPACITY

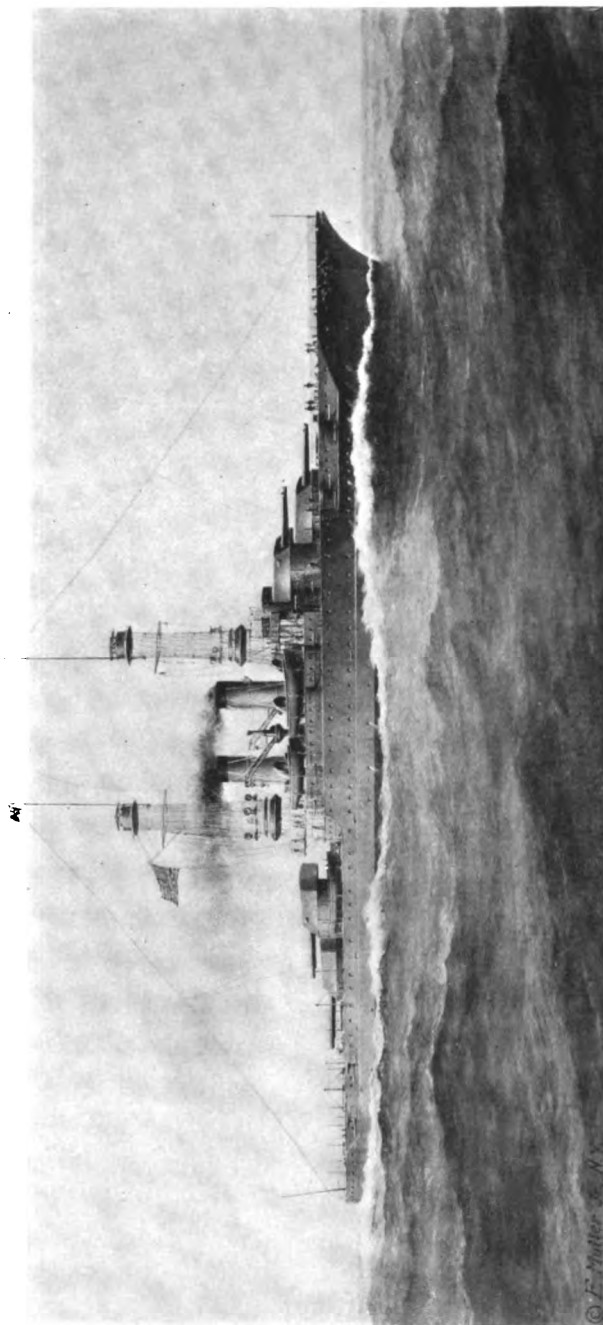
Based on a water temperature rise of 50° to 180° F. when supplied with sufficient steam at 15 lbs. gauge pressure.

MAXIMUM WORKING PRESSURE

25 lbs. per square inch.

NO FITTINGS FURNISHED

THE GRISCOM-RUSSELL COMPANY



U. S. BATTLESHIP, COLORADO CLASS

Multiwhirl Coolers. Reilly Evaporators, Submerged Type. Dyson Evaporator Feed Heaters
Reilly Distiller. Reilly Navy Type Heater. Reilly Fuel Oil Heater

Multiwhirl Cooler Section



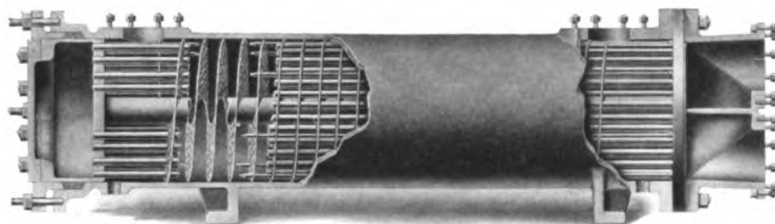
FOREWORD

In the past few years the cooling of lubricating oils used in turbine bearings, reduction gears and similar heavy duty work has demanded the serious attention of marine engineers. The adoption of the marine steam turbine has been accompanied by a rapid development in the art of reduction gearing.

Both turbine bearings and reduction gears require the positive cooling of the lubricating oil to dissipate the heat of friction, the same oil being used over and over again. The oil supplied to the bearings and gears must be of the correct temperature to maintain an oil film of the proper viscosity between the bearing surfaces.

The Multiwhirl Oil Cooler is the product of years of actual experience, study, and experiment. Elaborate tests indicate that the rate of heat transfer exceeds that secured by any previous type of commercial oil cooler, and at the same time the oil pressure drop is extremely low.

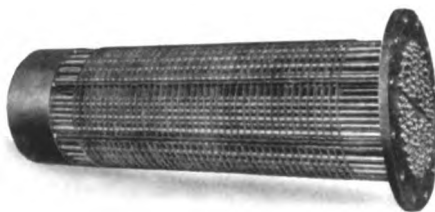
Multiwhirl Cooler



In the manufacture of oil coolers, precautions must be taken to remove all gritty substances, such as foundry scale, from the finished apparatus. Such substances, if picked up by the lubricating oil and carried into the turbine bearings, will cause untold damage. The cylindrical cast iron shell of the Multiwhirl Cooler is bored through-out, thus eliminating the faintest possibility of the presence of grit.

The cooling surface consists of smooth bore straight brass or copper tubes expanded into tube plates without the use of glands or packing. One tube plate is bolted solidly to the shell and the other is cast integral with the floating head of composition, which permits expansion and contraction of the tubes without strain on the tube joints.

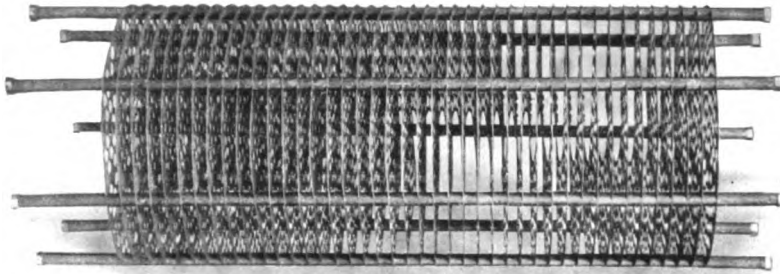
REMOVABLE TUBE BUNDLE



The entire tube bundle and baffle are removable from the shell for inspection, without breaking any of the oil connections.

This feature also facilitates cleaning if same should become necessary, but the Multiwhirl Cooler is less liable to accumulate sediment than any other type, for the helical path of the oil causes a constant scouring of the tubes and tends to keep the surfaces clean.

M A R I N E A U X I L I A R I E S



HELICAL BAFFLE

(Patents Pending)

The distinctive feature of the Multiwhirl Cooler is the helical baffle, which is made of sheet iron, perforated to permit the insertion of tubes. Spacer rods are located near the outer circumference of the baffle to secure rigidity and maintain an equal cross section of flow for the oil throughout its entire path. By the use of this form of baffle a maximum length of oil path is secured for a given amount of cooling surface and length of shell.

The principal cause of excessive oil pressure losses in other types of oil coolers is the fact that the oil is required to make many sharp turns in its travel through the shell. These sharp turns are avoided by the use of the helical baffle. This type of baffle directs the oil in its flow without appreciably retarding its progress and this smooth passage of the oil through the cooler causes a minimum pressure loss.

OPERATION

In operation, the lubricating oil is constantly circulated through the shell by pump pressure and is brought into intimate contact with the cooling surface by means of the helical baffle. The oil strikes the tubes substantially at right angles, and the relatively high velocity of the whirling body of oil scours not only the tube surfaces, but also the entire shell, thereby tending to keep the interior of the cooler clean. There are no dead pockets in which dirt can accumulate.

The cooling water passes through the tubes which are usually arranged in two or more passes.

Multiwhirl Cooler

ADVANTAGES

Helical baffle—long smooth oil path—minimum pressure drop.

Tube bundle removable—facilitating inspection and cleaning.

Tubes expanded into tube plates—no sweated joints.

Floating head construction—no expansion strains on tube joints.

Outside packed head—this construction eliminates any possible leakage of water into oil through faulty packing.

Compactness of unit—this is permitted by the high rate of heat transfer secured in the Multiwhirl Cooler.

Installation in any position—the Multiwhirl Cooler may be installed in any position with equal efficiency.

WHEN ORDERING MULTIWHIRL COOLERS THE FOLLOWING INFORMATION MUST BE GIVEN

1. Trade name of oil to be used.
2. U. S. gallons of oil to be cooled per minute.
3. Inlet temperature of oil to be cooled.
4. Desired final temperature of cooled oil.
5. Quantity of cooling water available per minute.
6. Initial temperature of cooling water.
7. Maximum allowable oil pressure drop through cooler only.
8. Maximum allowable water pressure drop through cooler only.

IT IS DESIRABLE THAT THE FOLLOWING INFORMATION BE GIVEN ALSO

9. Viscosity of oil at working temperatures according to "Universal Saybolt Viscosity Meter."
10. Density of oil, degrees Baume.
11. Name of oil company supplying oil.
12. Turbine horsepower.
13. Type and design of reduction gears.
14. Unusual conditions, if any, in relation to use of oil coolers.

M A R I N E A U X I L I A R I E S

Multiwhirl Cooler

| Size | I. D. Shell Inches | Approx. Length Overall Ft.-Ins. | Max. Water Conn. Inches | Max. Oil Conn. Inches | External Volume of Shell Cu. Ft. | Weight, Lbs. | | Code |
|------|--------------------------|--|----------------------------------|--------------------------------|---|--------------|------|-----------|
| | | | | | | Dry | Wet | |
| 102 | 6 $\frac{1}{2}$ | 3' 5" | 2 | 1 $\frac{1}{2}$ | 1.18 | 360 | 394 | Oleamen |
| 103 | 7 $\frac{1}{2}$ | 3' 8" | 2 $\frac{1}{2}$ | 1 $\frac{3}{4}$ | 1.7 | 410 | 470 | Oleamide |
| 104 | 7 $\frac{1}{2}$ | 4' 6" | 2 $\frac{1}{2}$ | 1 $\frac{3}{4}$ | 2.04 | 480 | 559 | Oleander |
| 105 | 9 | 4' 0" | 3 | 2 | 2.6 | 530 | 620 | Oleandrin |
| 106 | 9 | 5' 2" | 3 | 2 | 3.2 | 630 | 748 | Oleaster |
| 107 | 11 $\frac{1}{2}$ | 5' 0" | 4 | 3 | 4.88 | 850 | 1050 | Olecranon |
| 108 | 11 $\frac{1}{2}$ | 6' 6" | 4 | 3 | 6.34 | 1040 | 1292 | Olefiant |
| 109 | 13 $\frac{1}{2}$ | 6' 2" | 5 | 4 | 7.95 | 1270 | 1577 | Oleosity |
| 110 | 13 $\frac{1}{2}$ | 7' 2" | 5 | 4 | 8.9 | 1430 | 1789 | Olfaction |
| 111 | 15 $\frac{1}{2}$ | 6' 10" | 6 | 4 | 10.6 | 1610 | 2028 | Olfactory |
| 112 | 15 $\frac{1}{2}$ | 7' 4" | 6 | 4 | 11.14 | 1710 | 2165 | Olibanum |
| 113 | 16 $\frac{1}{2}$ | 6' 10" | 6 | 4 | 12.6 | 1880 | 2395 | Olifaut |
| 114 | 16 $\frac{1}{2}$ | 7' 3" | 6 | 4 | 13.35 | 1990 | 2547 | Oligarch |
| 115 | 18 $\frac{1}{2}$ | 7' 0" | 8 | 6 | 15.05 | 2150 | 2772 | Oligemia |
| 116 | 18 $\frac{1}{2}$ | 7' 6" | 8 | 6 | 16.2 | 2280 | 2959 | Oligidria |
| 118 | 19 $\frac{1}{2}$ | 7' 7" | 8 | 6 | 18.7 | 2580 | 3398 | Oliphant |
| 120 | 19 $\frac{1}{2}$ | 8' 6" | 10 | 8 | 20.7 | 2800 | 3703 | Oleprance |
| 122 | 19 $\frac{1}{2}$ | 9' 5" | 10 | 8 | 22.2 | 3060 | 4065 | Olivacea |

Sizes 102 to 104, inclusive, are regularly furnished with inside floating head.
 Sizes 105 to 122, inclusive, are regularly furnished with outside packed head.
 All sizes can be supplied with either type of head.

CONSTRUCTION

Shell of close grain cast iron. Water head of cast iron or composition.
 Floating head of composition, with cover of cast iron or composition.
 Stationary tube plate of rolled steel or composition.
 Tubes of $\frac{5}{8}$ " outside diameter, #18 B. W. G. seamless drawn copper or brass.
 Tubes expanded into tube plates. Helical baffle of sheet iron.

HYDROSTATIC TEST PRESSURES

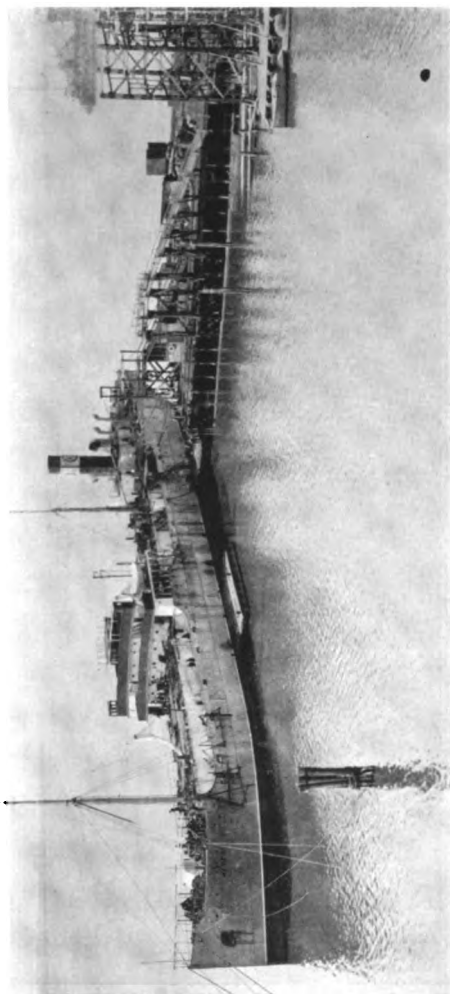
(NOT WORKING PRESSURES)

Water Side—50 lbs. per square inch.

Oil Side—80 lbs. per square inch.

NO FITTINGS FURNISHED

THE GRISCOM-RUSSELL COMPANY



S. S. HSKO

(Built by Chester Shipbuilding Company, Chester, Pa.)

Reilly Type D Marine Heater, Two Pass

Reilly Fuel Oil Heater Section



Reilly Oil Heater
Steel Shell Type

Oil as a fuel has many advantages for use with Marine Boilers. A few of these advantages are: total absence of ash, uniform operating conditions, low handling cost, small storage space and minimum danger of spontaneous combustion.

However, to insure proper vaporization and therefore good combustion of the fuel oil under boilers, it is necessary to preheat the oil no matter what grade of oil is used. This is accomplished by pumping the oil through a heater before the oil passes to the boiler. Live steam is regularly used as the heating agent because sufficiently high oil temperatures cannot be secured if exhaust steam is used. Provision, however, should always be made, particularly for light load conditions, to guard against overheating of the oil, causing deposits of carbon on the coils. It is seldom, if ever necessary for the temperature of the oil supplied to the burners to exceed 250° F.

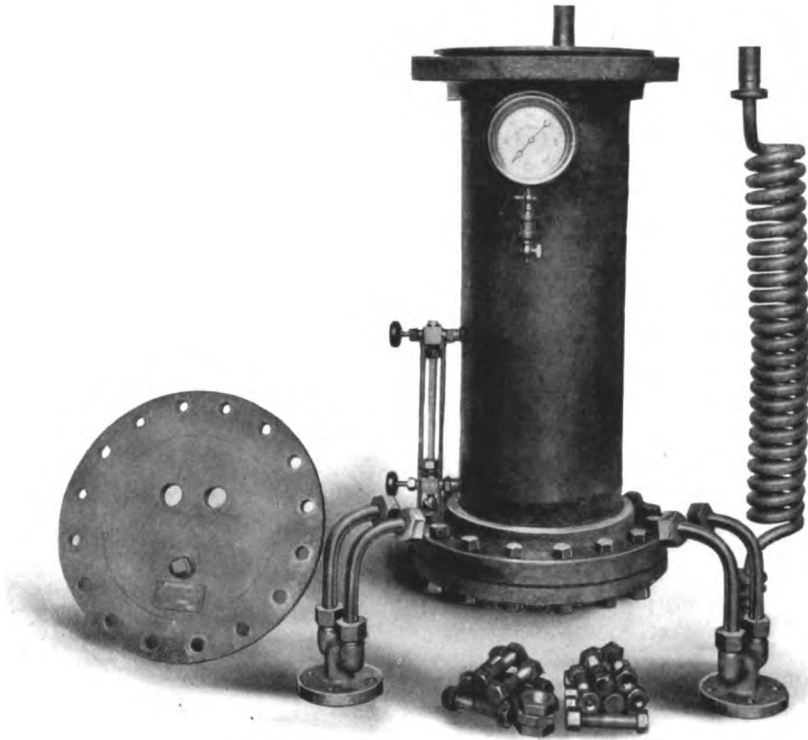
Internal joints or flanges are to be avoided in oil heater construction to prevent leakage of oil into the steam space of heater. Such oil would eventually reach the boilers by way of hot well or filter box.

The Reilly Oil Heater is designed to meet the exacting requirements outlined above. The oil is circulated through the coils and is heated by high pressure steam supplied to the shell.



Reilly Oil Heater
Cast Iron Shell
Type

Reilly Oil Heater Steel Shell Type



CONSTRUCTION

Shell of lap welded steel pipe equipped with rolled steel flanges and Van Stone joints.

Heads of open hearth boiler steel.

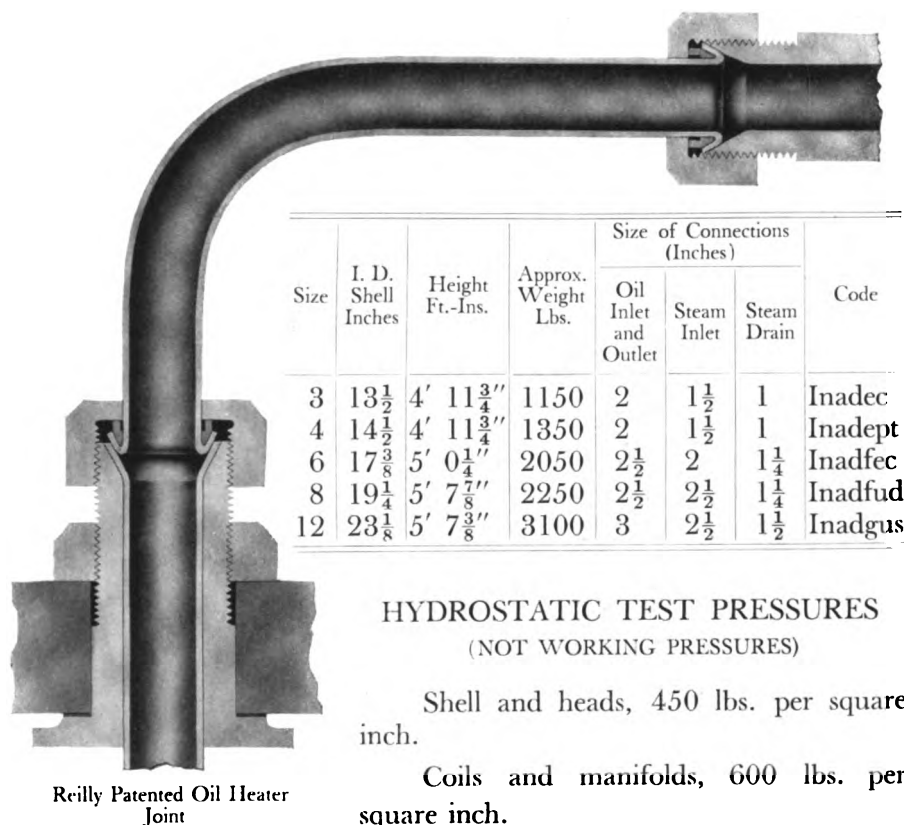
Manifolds of composition.

Supporting brackets of steel, riveted to shell.

Coils of 1" outside diameter, #16 B.W.G. seamless drawn steel tubing.

Coils attached to outside manifolds by special connections, so arranged that there are no oil joints inside the heater, thus eliminating any possibility of oil contaminating the condensed steam used as the heating medium.

Reilly Oil Heater Steel Shell Type



| Size | I. D. Shell Inches | Height Ft.-Ins. | Approx. Weight Lbs. | Size of Connections (Inches) | | | Code |
|------|--------------------------|-----------------------|---------------------------|---------------------------------|-----------------|-----------------|---------|
| | | | | Oil Inlet and Outlet | Steam Inlet | Steam Drain | |
| 3 | 13 $\frac{1}{2}$ | 4' 11 $\frac{3}{4}$ " | 1150 | 2 | 1 $\frac{1}{2}$ | 1 | Inadec |
| 4 | 14 $\frac{1}{2}$ | 4' 11 $\frac{3}{4}$ " | 1350 | 2 | 1 $\frac{1}{2}$ | 1 | Inadept |
| 6 | 17 $\frac{3}{8}$ | 5' 0 $\frac{1}{4}$ " | 2050 | 2 $\frac{1}{2}$ | 2 | 1 $\frac{1}{4}$ | Inadfec |
| 8 | 19 $\frac{1}{4}$ | 5' 7 $\frac{7}{8}$ " | 2250 | 2 $\frac{1}{2}$ | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | Inadfud |
| 12 | 23 $\frac{1}{8}$ | 5' 7 $\frac{3}{8}$ " | 3100 | 3 | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | Inadgus |

HYDROSTATIC TEST PRESSURES (NOT WORKING PRESSURES)

Shell and heads, 450 lbs. per square inch.

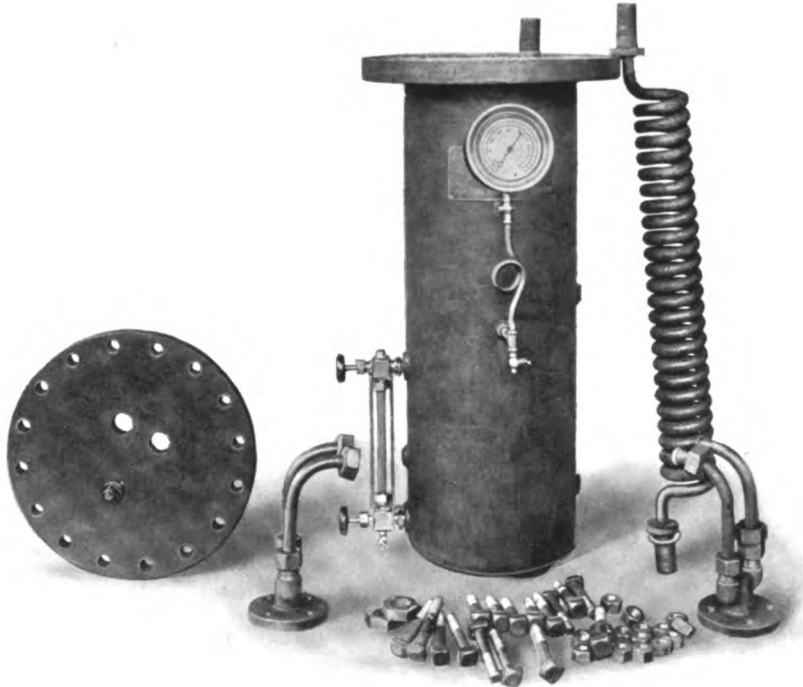
Coils and manifolds, 600 lbs. per square inch.

FITTINGS FURNISHED

Iron case pressure gauge with syphon and connections.
Water gauge glass and fittings.

THE GRISCOM-RUSSELL COMPANY

Reilly Oil Heater Cast Iron Shell Type



CONSTRUCTION

Shell of close grain cast iron.

Heads of steel.

Manifolds of composition.

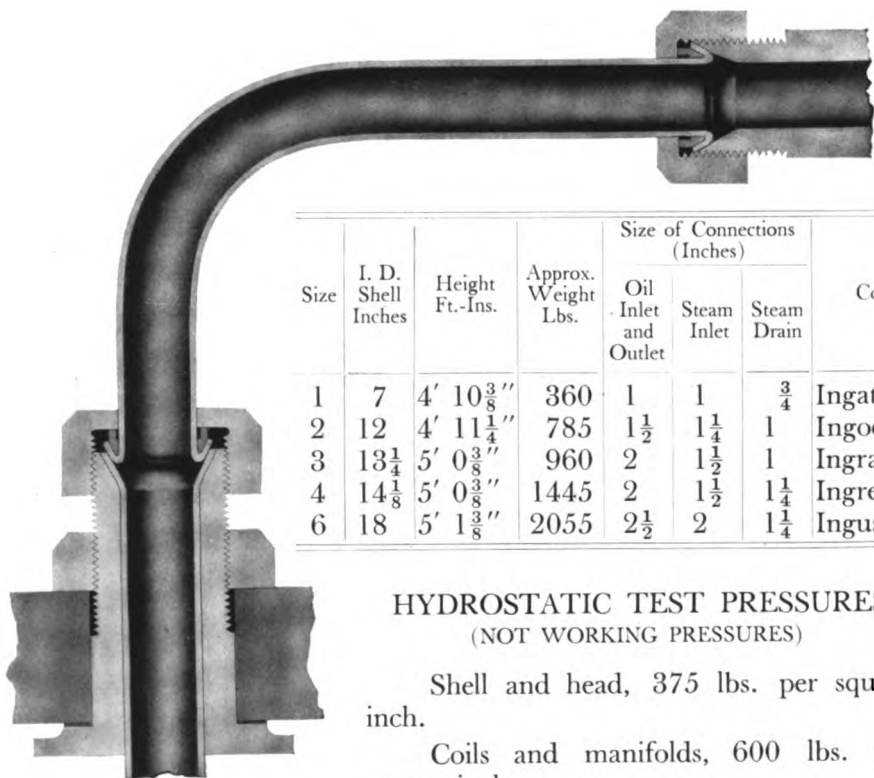
Supporting brackets cast on shell.

Coils of 1" outside diameter, #16 B. W. G. seamless drawn steel tubing.

Coils attached to outside manifolds by special connections, so arranged that there are no oil joints inside the heater, thus eliminating any possibility of oil contaminating the steam used as the heating medium.

MARINE AUXILIARIES

Reilly Oil Heater Cast Iron Shell Type



Reilly Patented Oil Heater Joint

| Size | I. D. Shell Inches | Height Ft.-Ins. | Approx. Weight Lbs. | Size of Connections (Inches) | | | Code |
|------|--------------------|-----------------------|---------------------|------------------------------|-----------------|-----------------|----------|
| | | | | Oil Inlet and Outlet | Steam Inlet | Steam Drain | |
| 1 | 7 | 4' 10 $\frac{3}{8}$ " | 360 | 1 | 1 | $\frac{3}{4}$ | Ingate |
| 2 | 12 | 4' 11 $\frac{1}{4}$ " | 785 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1 | Ingode |
| 3 | 13 $\frac{1}{4}$ | 5' 0 $\frac{3}{8}$ " | 960 | 2 | 1 $\frac{1}{2}$ | 1 | Ingratum |
| 4 | 14 $\frac{1}{8}$ | 5' 0 $\frac{3}{8}$ " | 1445 | 2 | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | Ingress |
| 6 | 18 | 5' 1 $\frac{3}{8}$ " | 2055 | 2 $\frac{1}{2}$ | 2 | 1 $\frac{1}{4}$ | Ingust |

HYDROSTATIC TEST PRESSURES (NOT WORKING PRESSURES)

Shell and head, 375 lbs. per square inch.

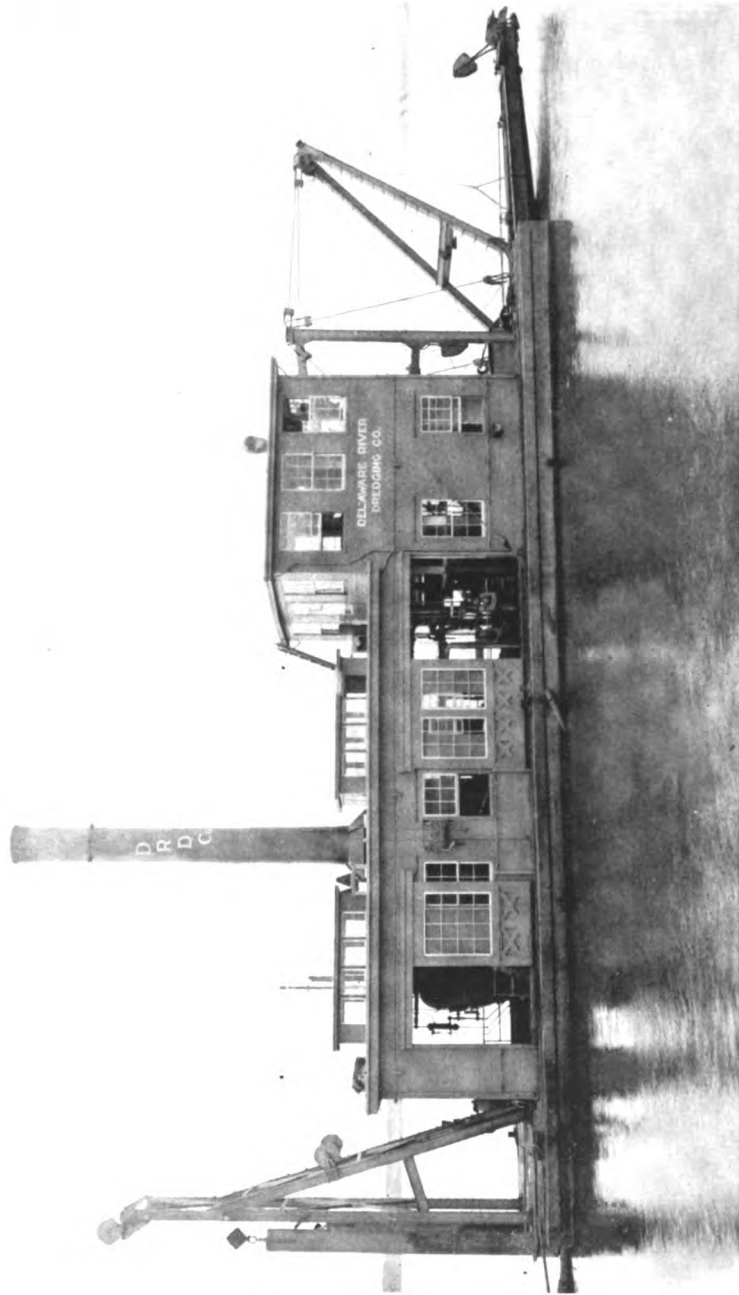
Coils and manifolds, 600 lbs. per square inch.

FITTINGS FURNISHED

Iron case pressure gauge with syphon and connections.

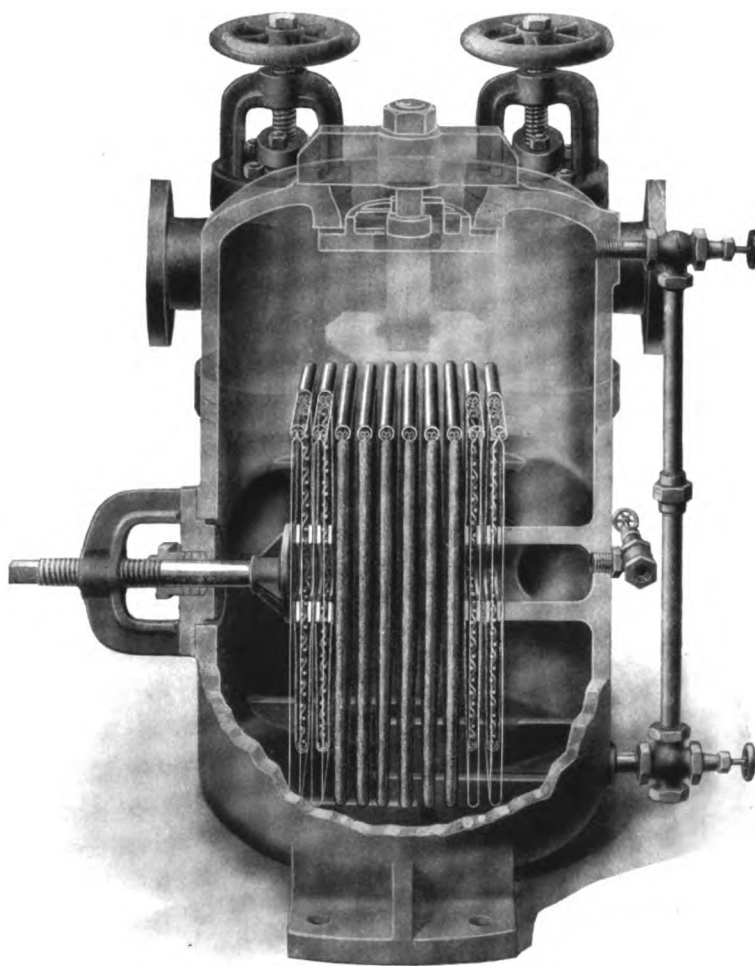
Water gauge glass and fittings.

THE GRISCOM-RUSSELL COMPANY



12 INCH HYDRAULIC DREDGE
(Owner Delaware River Dredging Co.)
Reilly Feed Water Filter and Grease Extractor
Reilly Type D Marine Heater

Reilly Multiscreen Feed Water Filter and Grease Extractor Section

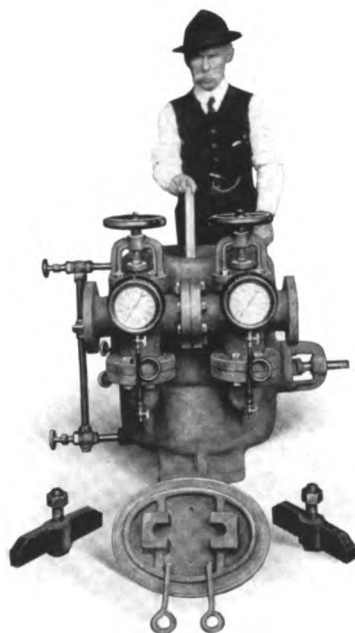


Reilly Multiscreen Filter and Grease Extractor

USES

The hot distilled water secured from marine power plants, operating condensing, is ideal for boiler feed after the oil which it contains has been removed. If this oil is allowed to enter the boiler, it forms a coating on the heating surfaces, necessitating the burning of additional coal and often resulting in severe damage to the boiler.

The Reilly Multiscreen Feed Water Filter and Grease Extractor efficiently removes this oil from the water. It is also suitable for the removal of mud or sand from lake or river water when used for boiler feed.

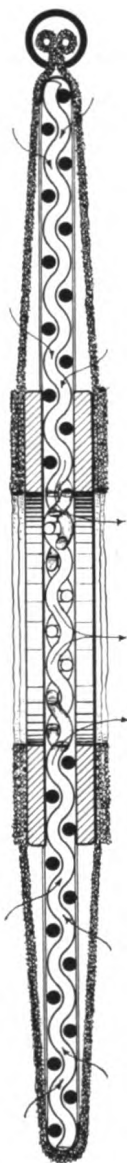


Assembling Filter

CONSTRUCTION

The Reilly Multiscreen Feed Water Filter and Grease Extractor is made with cast iron or boiler steel shell.

The area of the filtering surface is 500 times the area of the water inlet passage, far exceeding that of any other filter regularly manufactured, thus insuring a slow and efficient rate of filtration through the filtering cloths.



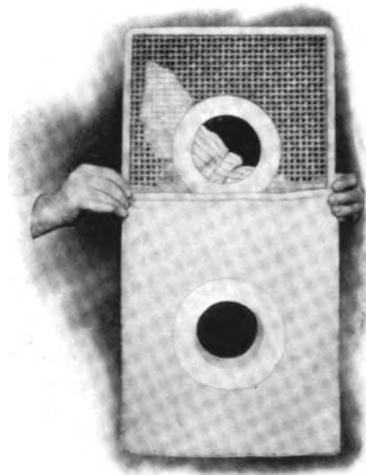
Cross Section of
Cartridge

The filtering elements are interchangeable cartridges or envelopes of heavy terry cloth mounted on individual, wire mesh, rectangular frames. These cartridges are designed to present a maximum filtering surface in a given space.

Reinforcing rings at the center of each cartridge act as spacers to keep the cartridges the proper distance apart.

The cartridges, when in position for operation, are forced one against the other by means of a compression screw, and the reinforcing rings then form a pipe for the passage of the water on its way out of the filter.

Bypass valves, allowing the uninterrupted flow of water to the boiler, and a standard manhole in the top of each filter for the removal of the cartridges, make cleaning a very easy operation.



Inserting Wire Screen in Filter Cloth
Envelope

THE GRISCOM-RUSSELL COMPANY

Reilly Multiscreen Filter and Grease Extractor

| Diameter of Pipe Inches | Filtering Area Sq. Ins. | I. D. of Shell Inches | Overall Height Ft.-Ins. | Face of Inlet Valve to Face of Outlet Valve Ft.-Ins. | Number of Cartridges | Approx. Weight Lbs. | Code |
|-------------------------|-------------------------|-----------------------|-------------------------|--|----------------------|---------------------|--------|
| 1½ | 1100 | 16¼ | 2' 5¼" | 1' 0½" | 7 | 700 | Grebeh |
| 2 | 1572 | 16¼ | 2' 5¼" | 1' 4" | 10 | 760 | Grecic |
| 2½ | 2472 | 16¼ | 2' 10¼" | 1' 11" | 10 | 980 | Gredad |
| 3 | 3632 | 21⅛ | 2' 11⅛" | 2' 1" | 13 | 1400 | Grenle |
| 3½ | 4880 | 21⅛ | 3' 2⅛" | 2' 2½" | 13 | 1640 | Grenof |
| 4 | 6440 | 21⅛ | 3' 7⅛" | 2' 4" | 13 | 1850 | Grenag |
| 5 | 9817 | 25 | 4' 11" | 2' 7⅞" | 18 | 2000 | Gregeh |
| 6 | 14135 | 25 | 4' 11" | 2' 11⅞" | 20 | 2500 | Greili |
| 7 | 23400 | 31⅛ | 5' 11¾" | 3' 2⅞" | 26 | 3100 | Grefej |
| 8 | 30380 | 31⅛ | 5' 11¾" | 3' 6⅞" | 28 | 3700 | Gregak |

CONSTRUCTION

Sizes 1½" to 4" inclusive:

Shell and manhole cover of close grain cast iron.

Screens of #3 mesh, woven of #11 B. W. G. galvanized steel wire.

Filtering medium of terry cloth.

Bypass valves 1½" size, brass body, screwed. Other sizes iron body, brass mounted, flanged.

Sizes 5" to 8" inclusive:

Shell of boiler steel.

Heads of flange steel.

Manhole cover of cast steel.

Screens of #3 mesh, woven of #11 B. W. G. galvanized steel wire.

Filtering medium of terry cloth.

Bypass valves, iron body, brass mounted, flanged.

M A R I N E A U X I L I A R I E S

Reilly Multiscreen Filter and Grease Extractor

CAPACITIES

Water Passing Reilly Filter and Extractor per Hour

Based on 62½ lbs. per cu. ft. 231 cu. in. per gallon

| Dia. of Pipe Inches | Velocity, feet per minute | | | | | |
|------------------------------|---------------------------|---------|---------|---------|---------|---------|
| | 150 | | 200 | | 250 | |
| | Pounds | Gallons | Pounds | Gallons | Pounds | Gallons |
| 1½ | 6,903 | 826 | 9,204 | 1,101 | 11,505 | 1,378 |
| 2 | 12,270 | 1,470 | 16,360 | 1,960 | 20,450 | 2,450 |
| 2½ | 19,175 | 2,295 | 25,566 | 3,060 | 31,958 | 3,825 |
| 3 | 27,610 | 3,305 | 36,815 | 4,405 | 46,020 | 5,510 |
| 3½ | 37,583 | 4,498 | 50,110 | 5,998 | 62,680 | 7,498 |
| 4 | 49,090 | 5,875 | 65,450 | 7,835 | 81,810 | 9,790 |
| 5 | 76,700 | 9,180 | 102,265 | 12,240 | 127,830 | 15,300 |
| 6 | 110,450 | 13,220 | 147,260 | 17,625 | 184,080 | 22,030 |
| 7 | 150,330 | 17,990 | 200,440 | 23,990 | 250,550 | 29,990 |
| 8 | 196,350 | 23,500 | 261,800 | 31,335 | 327,250 | 39,170 |

MAXIMUM WORKING PRESSURE

250 lbs. per square inch.

FITTINGS FURNISHED

One spare set of filtering cloths. Two pressure gauges.

Surface and bottom blow-off valves.

Valve for steam cleaning connection and flow reversing.

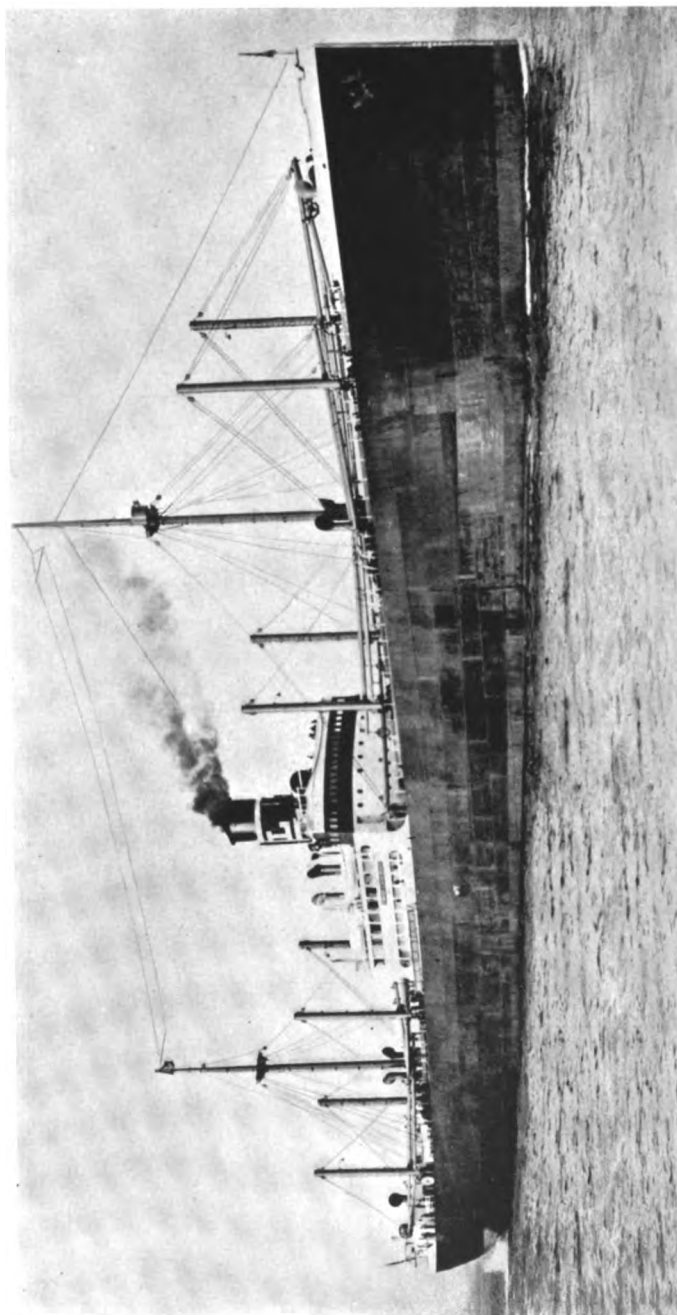
Water gauge glass and fittings.

Water inlet 3-way valve. Water outlet cross valve.

INFORMATION TO BE GIVEN WHEN ORDERING REILLY FILTERS

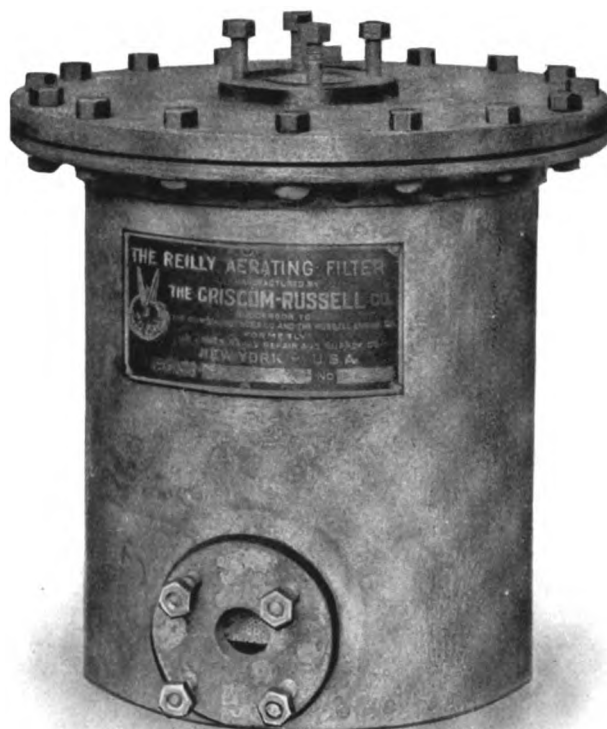
1. Diameter of feed pipe.
2. Total boiler horse power.
3. Maximum quantity of water to be handled. (Gallons per minute).
4. Character of water and impurities.
5. Working pressure of water in filter.
6. Grate surface of boilers.
7. Type of Engine.
8. Size of Engine.
9. Name of vessel.

THE GRISCOM-RUSSELL COMPANY



S. S. EDWARD LUCKENBACH
Reilly Evaporators, Submerged Type, Cast Iron Shell
Reilly Navy Type Heater

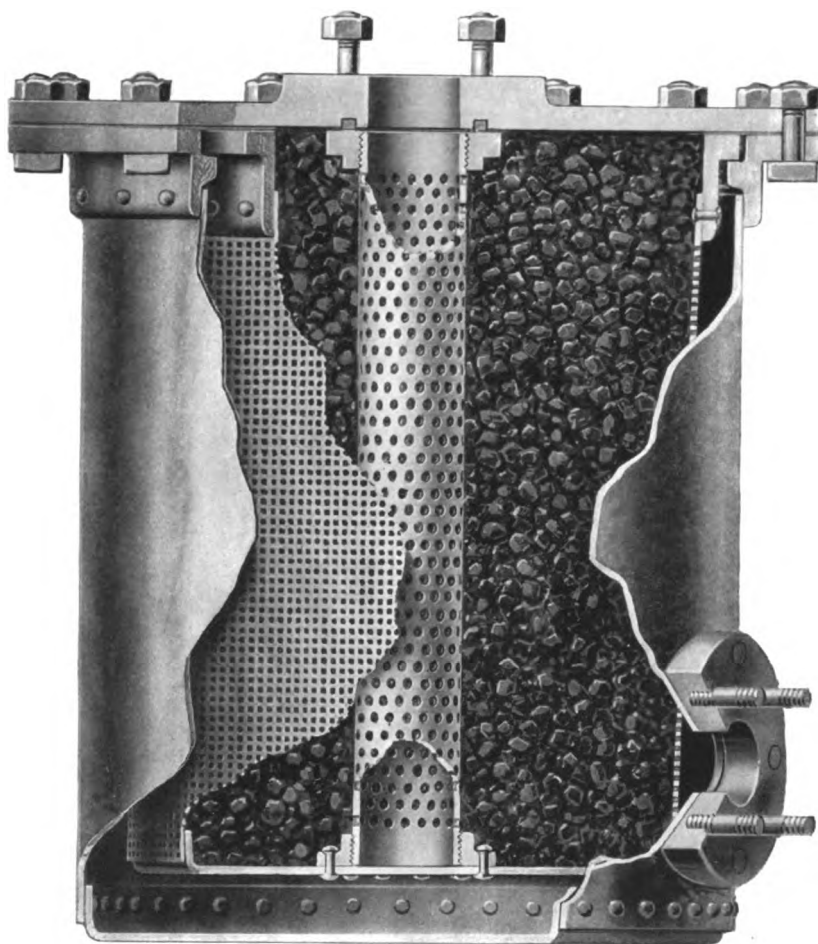
The Reilly Aerating Filter Section



Distilled water, as it comes from an evaporator and distiller, is free from every solid impurity and all bacteria, but it sometimes contains unpleasant tasting gases, which have been liberated from the raw water. These gases must be removed before the distilled water is suitable for sweet tasting drinking water. The Reilly Aerating Filter furnishes a simple, positive method of removing these gases, and of rendering the water potable.

THE GRISCOM-RUSSELL COMPANY

Reilly Aerating Filter



Reilly Aerating Filter

The filter contains a large filtering bed of animal bone charcoal, supported in a perforated removable basket. The water enters the filter at the side or bottom and filters through the charcoal to a perforated vertical tube at the center, to which the outlet pipe is attached. Charcoal has a well known property of absorbing many times its own volume of most of the common gases. It is this enormous absorption power which serves to remove the ill tasting gases of decomposition which have been liberated from the raw water by boiling, and carried over through the distiller as gas mixed with the water. The absorption capacity is so great that the original charge of charcoal will last a long time. When the charcoal becomes fouled, the basket can be removed and refilled with fresh charcoal. Charcoal may be made suitable for re-use, at least once, by baking it in an open pan.

| Diameter (Inches) | Capacity U. S. Gallons per 24 hours | Overall Height (Inches) | Diameter Water Connections (Inches) | Approx. Weight Including Charcoal (Lbs.) | Code |
|----------------------|---|-------------------------------|--|--|--------|
| 5 | 100 | 7 | $\frac{3}{8}$ | 35 | Daarom |
| 10 | 1200 | $13\frac{1}{4}$ | 1 | 95 | Dabbeh |
| 13 | 3500 | 17 | $1\frac{1}{2}$ | 125 | Daboia |
| 24 | 5500 | $27\frac{3}{4}$ | 2 | 375 | Dacapo |
| 30 | 8500 | 34 | $2\frac{1}{2}$ | 960 | Dacian |

CONSTRUCTION

Shell and basket of galvanized iron.

Pipe flanges of cast iron.

Filtering medium—animal bone charcoal.

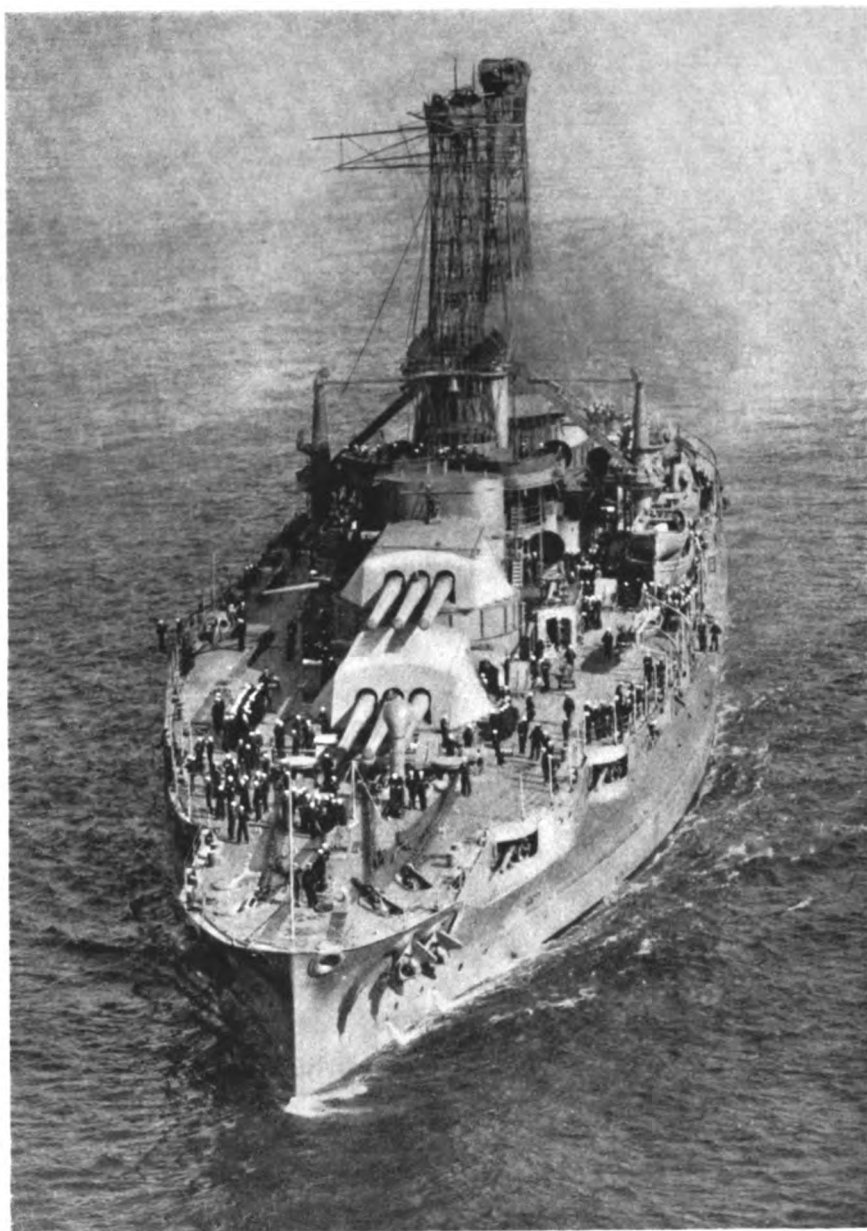
MAXIMUM WORKING PRESSURE

Standard filter designed for gravity work only.

Pressure type filter built upon request.

NO FITTINGS FURNISHED

THE GRISCOM-RUSSELL COMPANY



U. S. S. PENNSYLVANIA
Reilly Navy Type Heaters

Reilly Coil Section



Reilly Evaporator, Submerged Type, Coil



Reilly Evaporator Feed Heater Coil



Reilly Type D Marine Distiller Coil



Reilly Type K Marine Distiller Coil



Reilly Copper Shell Distiller Coil



Reilly Navy Type Distiller Coil



Reilly Feed Water Heater Coil



Reilly Oil Heater Coil

Reilly Coils

REILLY Multicoils are made of seamless drawn tubing of copper, Admiralty material, commercial brass or steel, depending upon the particular unit in which they are used. Special machines are employed to coil the tubing by rolling without filling, thus insuring clean coils of a uniform thickness of metal.

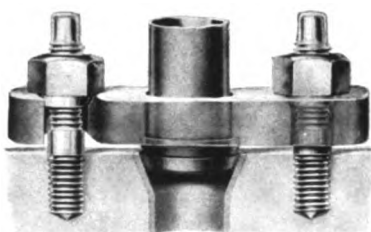
Coil ends are equipped with patented Reilly metal to metal joints, free from brazing. These joints are of cone seat construction, flanged or screwed union type, making tight connections which will not leak. The ends of the coils are turned over by a special process on small ferrules, which are engaged by nuts or flanges, thereby forcing the turned over face to a firm seat against its bearing on the manifold. The striking characteristic of this patented joint is its freedom from leakage, due to the narrow face of contact on the cone.

In certain types, the tubing is crimped throughout its length to assist in breaking up the body of water passing through the coils and thus increase the heat transfer efficiency of the coil.

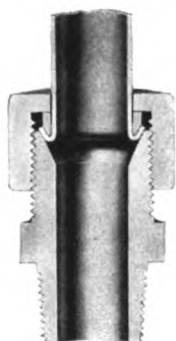
As every Reilly Coil is in the form of a spring, expansion and contraction of the tubing is taken care of without any strain.

The Reilly Coils used in any one type of apparatus are standard and interchangeable in all units of that particular type.

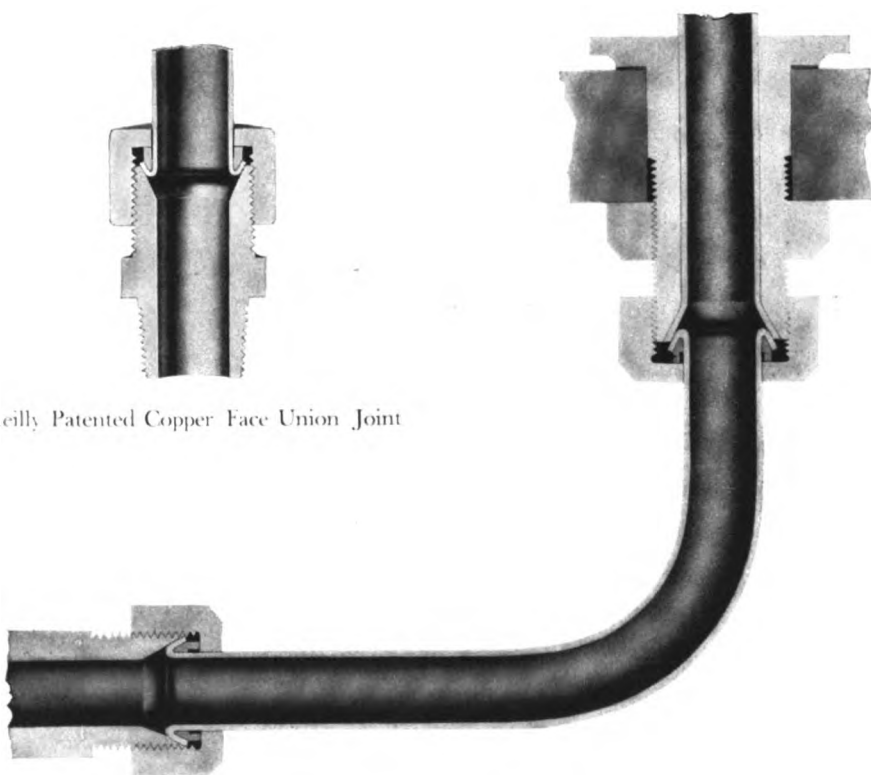
Reilly Coil Joints



Reilly Patented Cone Seat Flanged Connection



Reilly Patented Copper Face Union Joint



Reilly Patented Oil Heater Joint

Reilly Evaporator, Submerged Type, Coil



CONSTRUCTION

Tubing of 1" outside diameter, #16 B. W. G. seamless drawn brass, uncrimped. Either plain finish or tinned inside and out.

Coil ends equipped with Reilly cone seat flanged connections, free from brazing.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

Reilly Evaporator Feed Heater Coil



CONSTRUCTION

Tubing of 1" outside diameter, #16 B. W. G. seamless drawn copper, uncrimped, and tinned inside and out.

Coil ends equipped with Reilly cone seat flanged connections, free from brazing.

This coil is interchangeable with the Reilly Navy Type Distiller coil.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

Reilly Type K Marine Distiller Coil



CONSTRUCTION

Tubing of 1" outside diameter, #16 B. W. G. seamless drawn copper, crimped and tinned inside and out.

Coil ends equipped with Reilly patented copper face union joints, free from brazing.

This coil may be used in the Reilly Type D Marine Distiller, Reilly Navy Type Heater and Reilly Type D Marine Heater.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

Reilly Type D Marine Distiller Coil



CONSTRUCTION

Tubing of 1" outside diameter, #16 B. W. G. seamless drawn copper, uncrimped and tinned inside and out.

Coil ends equipped with patented copper face union joints, free from brazing.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

THE GRISCOM-RUSSELL COMPANY

Reilly Copper Shell Distiller Coil



CONSTRUCTION

Tubing of $\frac{7}{8}$ " outside diameter, #16 B. W. G. seamless drawn copper, uncrimped and tinned inside and out.

Coil ends equipped with Reilly patented copper face union joints, free from brazing.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

Reilly Navy Type Distiller Coil



CONSTRUCTION

Tubing of 1" outside diameter, #16 B. W. G. seamless drawn copper, uncrimped and tinned inside and out.

Coil ends equipped with Reilly patented cone seat flanged connections, free from brazing.

This coil is interchangeable with the Reilly Evaporator Feed Heater coil.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

Reilly Feed Water Heater Coil

For Reilly Navy Type Heaters and Reilly Type D Marine Heaters



CONSTRUCTION

Tubing of 1" outside diameter, #16 B. W. G. seamless drawn copper, crimped and untinned.

Coil ends equipped with Reilly patented copper face union joints, free from brazing.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

Reilly Oil Heater Coil



CONSTRUCTION

Tubing of 1" outside diameter, #16 B. W. G. seamless drawn steel, uncrimped and untinned.

Coils are attached to shell and to outside manifolds by the Reilly Patented Oil Heater Joint. The arrangement of this connection is such that all oil joints are outside the shell, insuring against any leakage of oil into the condensed steam.

HYDROSTATIC TEST PRESSURE

500 lbs. per square inch.

THE GRISCOM-RUSSELL COMPANY

Reilly Coils

The following table contains data regarding Reilly Coils used in the present standard equipment :

| Apparatus Where Used | O. D. Tubing Inches | O. D. Coil Inches | Length of Coil | | Material | Weight Lbs. | Code |
|------------------------------------|---------------------------|-------------------------|------------------------------|------------------------------------|----------------------------------|----------------|-----------|
| | | | End to End Ft.-Ins. | Center to Center Ft.-Ins. | | | |
| Submerged Type Evaporator . . . | 1 | 4 $\frac{5}{8}$ | | 2' 3" | Uncrimped Brass, Tinned . . . | 10. | Velation |
| Evaporator Feed Heater . . . | 1 | 4 $\frac{5}{8}$ | | 3' 3" | Uncrimped Copper Tinned . . . | 19. | Velazum |
| Type K Marine Distiller . . . | 1 | 4 $\frac{1}{4}$ | 3' 4" | | Crimped Copper Tinned . . . | 19. | Velator |
| Type D Marine Distiller . . . | 1 | 4 $\frac{5}{8}$ | 3' 4" | | Uncrimped Copper Tinned . . . | 19. | Velaustic |
| Copper Shell Dis- tiller . . . | $\frac{7}{8}$ | 4 | 2' 10" | | Uncrimped Copper Tinned . . . | 13. | Velaxiom |
| Navy Type Distiller | 1 | 4 $\frac{5}{8}$ | | 3' 3" | Uncrimped Copper Tinned . . . | 19. | Velazine |
| Navy Type Heater | 1 | 4 $\frac{1}{4}$ | 3' 4" | | Crimped Copper . | 18.5 | Velace |
| Type D Marine Heater . . . | 1 | 4 $\frac{1}{4}$ | 3' 4" | | Crimped Copper . | 18.5 | Velark |
| Oil Heater . . . | 1 | 4 $\frac{5}{8}$ | 3' 4" | | Uncrimped Steel . | 21.5 | Velaskum |

The following table contains data regarding Reilly Coils obsolete in type but available as spares for equipment now installed :

| Apparatus Where Used | O. D. Tubing Inches | O. D. Coil Inches | Length of Coil | | Material | Weight Lbs. | Code |
|-----------------------------------|---------------------------|-------------------------|------------------------------|------------------------------------|----------------------------------|----------------|----------|
| | | | End to End Ft.-Ins. | Center to Center Ft.-Ins. | | | |
| Standard Marine Heater . . . | $\frac{7}{8}$ | 4 | 2' 10" | | Uncrimped Copper | 12.5 | Velbac |
| Navy Type Evap- orator . . . | 1 | 4 $\frac{5}{8}$ | | 3' 3" | Uncrimped Copper Tinned . . . | 19. | Velbacio |
| Navy Type Evap- orator . . . | 1 | 4 $\frac{5}{8}$ | | 3' 3" | Uncrimped Brass Tinned . . . | 17. | Velbacus |
| Standard Marine Evaporator . . | $\frac{7}{8}$ | 5 | 2' 7" | | Crimped Copper Tinned . . . | 13. | Velbadum |

HYDROSTATIC TEST PRESSURE (NOT WORKING PRESSURE)

All Reilly Coils are tested to 500 lbs. per square inch hydrostatic pressure inside.

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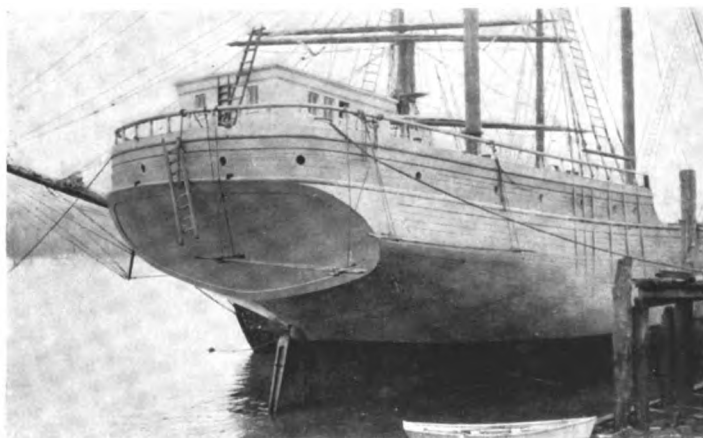
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